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REPORT

OF THE

COMMISSIONER OF PATENTS

FOR THE YEAR 1852.

PART I.

ARTS AND MANUFACTURES.

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LETTER
FROM
THE COMMISSIONER OF PATENTS,
TRANSMITTING
His Annual Report.

MARCH 1, 1853.—Ordered to be printed.

MARCH 3, 1853.—Ordered that 17,000 additional copies be printed for the use of the Senate.

UNITED STATES PATENT OFFICE,
February 28, 1853.

SIR: I have the honor of transmitting to you, as required by law, that portion of the Report of this Office, for the year 1852, which relates to Arts and Manufactures. The delay which has occurred in presenting it, and some deficiencies which might otherwise have been supplied, must be attributed to the recent period at which I entered upon the duties of this post, and the very urgent nature of the business which has meanwhile devolved upon me.

I have the honor to be, very respectfully, your obedient servant,
SILAS H. HODGES.

Hon. DAVID R. ATCHISON,
President pro tem. of the Senate.



REPORT

OF THE

COMMISSIONER OF PATENTS.

OF THE

I.

FINANCIAL TRANSACTIONS.

UNITED STATES PATENT OFFICE, *January, 1853.*

The financial transactions of the Patent Office during the preceding year will be sufficiently exhibited by the following statements:

1. *Statement of moneys received at the Patent Office during the year 1852.*

Received on applications for patents, reissues, additional improvements and extensions, and on caveats, disclaimers, and appeals.....	\$104,485 00
Received for copies and recording assignments.....	7,571 34
Total receipts.....	112,056 34

2. *Statement of expenditures and payments from the Patent fund during the year 1852.*

For salaries.....	\$36,674 23
For compensation of librarian.....	397 82
For temporary clerks.....	18,992 93
	<hr/> \$56,064 98
For books for the library.....	597 63
For contingent expenses.....	13,037 98
For agricultural statistics and purchase of seeds.....	4,831 33
Total expenditures.....	74,531 92
Refunded on withdrawals.....	\$21,159 99
Refunded money paid by mistake.....	225 00
	<hr/> 21,381 99
Total payments.....	95,916 91

Leaving a balance of receipts over payments of.....	\$16,139 43
If this balance is added to the Patent fund on hand January 1, 1852.....	24,152 95

The sum, which is..... 40,292 38
is the amount of the Patent fund, January 1, 1853.

The payments to the temporary clerks have been unavoidably increased during the year in consequence of the increase of business, rendering the employment of additional force necessary in several departments. According to a practice which has been long sanctioned, this additional force has been compensated under the provision for temporary clerks. The contingent expenses have also been somewhat augmented from the same cause. The only other item which has been enlarged materially is that of salaries, and this is to be accounted for by the addition to the corps of examiners made during the preceding year. The additional examiners began to receive their pay, it is true, during that year, and this item appeared larger, for that reason, in the last Report than ever before; but it was not till the year 1852 that they drew their full annual salaries, and consequently the amount is larger still in the above statement.

It should be observed that, though the expenditures, \$95,916 91, are greater than those of the preceding year, which were \$86,916 93, the receipts have more than kept pace with them: those of 1851 being only \$95,738 61; those of 1852, \$112,056 34. The difference in the expenditures of the two years is \$8,999 98; of the receipts, \$16,317 73. Last year the surplus of expenditures over receipts, which was carried to the credit of the Patent fund, was \$8,821 68; this year it is \$16,139 43. These statements will, it is believed, evince to the satisfaction of every one that the increase of business fully justifies the increase which has taken place in the expenditures.

A more correct apprehension as to the amount of receipts and expenditures for each year may be obtained by deducting the sums refunded on withdrawals, and for moneys paid by mistake. With this correction, they would stand thus:

Receipts in 1851.....	\$81,160 72
Expenditures.....	72,339 04

Surplus..... 8,821 68

Receipts in 1852.....	\$90,671 35
Expenditures.....	74,531 92

Surplus..... 16,139 43

The moneys thus refunded were never really available to the Office; nor is the payment of them any part of its proper expenditures. As the largest portion of the withdrawals, however, is on account of fees paid during former years, the subject is not susceptible of being followed up so as to attain perfect accuracy.

Office labors.—The extent of the business transacted in examining applications, granting patents, and the like, may be gathered, in some measure, from the following:

3. *Statement of applications received and under consideration during the year 1852.*

Cases on the examiners' desks, January 1, 1852.....	155	
Applications received during the year.....	2,639	
	<hr/>	2,794
Patents issued during the year.....	1,020	
Applications on hand not acted upon.....	481	
Rejections and suspensions.....	1,293	
	<hr/>	2,794
	<hr/>	<hr/>

Included among these were—

Patents reissued.....	18
Additional improvements.....	4
Extensions.....	3
Designs.....	107

There have also been filed—

Caveats.....	996
Disclaimers.....	2

The number of patents expired during the year is..... 525
None have been extended by Congress.

These statements fall far short of exhibiting the amount of labor performed in this department. An application is rarely disposed of before it has received at least two thorough examinations. Most of them receive more, not a few as many as six. The 1,020 patents issued, and the rejections and suspensions, stated at 1,293, (both amounting to 2,313,) will probably cost not less than 7,000 examinations. These have not all taken place within the year, it is true; some of them were made previously, some are yet to be made. Against these may be reckoned the numerous examinations of cases entered during previous years, and not yet disposed of. The task is rendered more onerous in consequence of the investigations being extended over such a length of time; the cases of an early date being no longer familiar to the mind, but requiring something of the care and labor of so many new ones. Many of them are in fact new to the examiners, from the frequent changes which have lately occurred in their corps.

Deducting the number of cases on hand at the beginning of the year (155) from those on hand at its close, (481,) the Office will be seen to have fallen in arrear to the number of 326. This does not equal the increase in the number of applications received during the year (2,639) over those received the year previous, (2,258,) which is 381. The caveats have also risen from 760 to 996. They do not, it is true, require to be investigated like an application. But no patent is ever issued until the caveats are thoroughly searched, lest it should conflict with some of them. Any marked addition to their numbers involves, therefore, an addition to the labors of the examiner.

That which has mainly contributed to augment the number of cases on hand, is the resignation of three of the examiners within the year. One of them had become incapable, through sickness, of discharging the duties of his post for several weeks before he relinquished it, and several more elapsed before his place was supplied. Applications were multiplied at his desk during this period, so as to enhance the labors of his su

cessor beyond what would have been otherwise required to dispose of the same amount of business. More than half of the accumulation of the year has taken place at this desk, in spite of the strenuous efforts of its present occupant.

In connexion with this subject it is proper to remark that, immediately after the close of the year, the oldest remaining examiner sent in his resignation. It cannot be necessary to demonstrate the high value to be attached to experience in this service, or the disastrous consequences of these frequent changes. It seems plain that stronger inducements must be held out to these officers to retain their posts; and the facility with which they abandon them, after having become conversant with their duties, gives force to the inquiry whether these situations should not be rendered more desirable and more permanent. The liability to removal is one great inducement to engage in other pursuits. It is known to have been the chief cause of several resignations, and has probably had more or less effect in producing others. The most eminent skill and science are demanded for these positions, and can in no way be so readily secured as by relieving their occupants from the apprehension of being dismissed to find employment anew.

The next table is the same that was published in the last Report, adding the transactions of another year. It will serve, in some degree, to show with what a steady progress the business of the Office has advanced for the period embraced, and how strong is the presumption that it will be constantly enlarged hereafter.

It must not be inferred, from the comparatively brief space occupied by these statements and tables, that the information conveyed is less than usual. All the statistics of any consequence, which it is customary to furnish in this form, will be found in them. Some tables showing the transactions of the Office for each month, and one exhibiting the number of patents issued to the citizens of each State, are all that are omitted. The latter can be readily supplied from the Classified List of Patents issued.

Table exhibiting the business of the Office for twelve years, ending December 31, 1852.

Years.	Applications filed.	Caveats filed.	Patents issued.	Cash received.	Cash expended.
1841.....	847	312	495	\$40,413 01	\$23,065 87
1842.....	761	291	517	36,505 68	31,241 48
1843.....	819	315	531	35,315 81	30,776 96
1844.....	1,045	380	502	42,509 26	36,344 73
1845.....	1,246	452	502	51,076 14	39,395 65
1846.....	1,272	448	619	50,264 16	46,158 71
1847.....	1,531	533	572	63,111 19	41,878 35
1848.....	1,628	607	660	67,576 69	58,905 84
1849.....	1,955	595	1,076	80,752 78	77,716 44
1850.....	2,193	602	995	86,927 05	80,100 95
1851.....	2,258	760	869	95,738 61	86,916 93
1852.....	2,639	996	1,020	112,056 34	95,916 91

It is gratifying to perceive from this table that there is no faltering among us in the march of improvement. Looking at what has already been accomplished, some find it difficult to conceive that this flood of discoveries and improvements is still to maintain its progress, and even exhibit a swelling tide. As each annual Report appears, they look for a falling off in the list of applications and patents, and doubt whether there is room for the continued exercise of inventive genius. These apprehensions, it is plain, are not to be fulfilled in our day. At no time have there been more decisive indications that every step that is taken in this field, instead of bringing us nearer to the close of our career, does but open new scenes to explore, and prepares the way for new triumphs. The number of patents issued during the past year has been exceeded only in 1849; while the applications exhibit a marked advance in numbers over those of any former period. From the reports of the examiners, the public will learn that, in utility and ingenuity, the achievements here recorded rival those that have preceded them. And scarcely had the year been closed, when a new motive force was brought to the test of experiment; and if we might trust to accounts entitled to some confidence, it bids fair, from its superior economy, safety, and usefulness, to banish the power that has hitherto been our boast and wonder, and has exercised our skill and ingenuity to improve.

The language in which the Secretary of the Interior speaks of this Office in his late annual report is so just, and the measures repeatedly urged by the late Commissioner, which are advocated by him, are so essential to the efficiency of its operations, that it cannot be deemed amiss to record the entire passage in these pages.

Extract from the Report of the Secretary of the Interior.

"The eastern wing of the noble structure, erected and ultimately to be used for purposes connected with the industrial pursuits of our country, will soon be completed and ready for occupation. Some progress has also been made upon the basement of the western wing, and a large quantity of material has been collected with a view to the vigorous prosecution of the work next spring. The basement of the principal building has been greatly improved by dressing the rough stone of which it was built, so as to make it conform, in its general appearance, to similar portions of the newly erected building.

"There is probably no bureau connected with the government in whose operations the public at large feel a deeper interest than those of the Patent Office. It is inseparably associated with every interest of our country. The mechanic, the merchant, the manufacturer, and the farmer, are all concerned in everything which diminishes the labor of production in any of the departments of industry. Our people are eminently practical and ingenious. They are constantly employed in the discovery of new means of accomplishing important results at a diminished cost of time, labor, and money. The steam engine, the cotton-gin, and the magnetic telegraph, are striking and imperishable memorials of the success which has attended their efforts. In the early period of our history, when population was sparse, and the prices of agricultural productions high, the labor of the country was directed mainly to the cultivation of the soil. But, as population progressively increases, more

attention is devoted to mechanical pursuits and the invention of machinery by which the work of many may be accomplished by a few. Not a day passes without furnishing some evidence of this fact, in the form of applications for patents for important inventions and discoveries. The mechanical interest has therefore become one of great magnitude, and it is justly entitled to all the protection and assistance which can be bestowed by Congress consistently with the provisions of the Constitution.

"The general principles of our patent system seem to have met with universal approbation, and to have been attended with beneficent results in practice. Since the organization of the Office in 1836, it has advanced with rapid strides. At that date, one 'examining clerk' was enabled to make all the preliminary investigations which were required to ascertain whether the applicant was entitled to a patent; but such has been the increase of the business, that six principal examiners and as many assistants are not now able to keep pace with it. The number of models in the Office on the 1st day of January, 1836, was 1,069; in the beginning of the year 1851 they had increased to 17,257; and at the close of the present year they will fall but little short of 23,000. If they should continue to increase in this proportion, making no allowance for the augmentation consequent on the increase of population, by the close of the present century they will amount to 150,000, and the whole of the present Patent Office edifice will not be sufficient for their convenient display. To provide against this contingency, as well as to accomplish other important results, I respectfully propose that the Commissioner of Patents be required to have prepared for publication a careful analytical and descriptive Index of all discoveries and inventions which have been patented, accompanied by accurate descriptions and drawings which will fully explain the principles and practical operation of the subject of the patent. The advantages of such a publication would be almost incalculable. It would not only perpetuate the invention or discovery by avoiding the casualties by fire and other causes, but it would multiply and diffuse among the people at large the specifications and descriptions, and substantially bring home to every neighborhood to which a copy of the work might be sent the benefits of the Patent Office. In much the larger number of cases the necessity for preserving and displaying the models would be obviated.

"The pages of the published Report would be a safer and more convenient depository for them than the cabinets of the Patent Office, and they would be accessible to everybody. Inventors in remote parts of the country would be placed on an equal footing with those residing near the seat of government. When their thoughts were turned to a particular class of machinery, instead of being compelled to make a journey to Washington to see what had already been done in that department of the arts, they could at once turn to the analytical index, and ascertain what progress had been made by others.

"Under the present system it not unfrequently happens that ingenious persons, having conceived what they believe to be a new idea, which, when carried into practice, will be of great value, employ much of their time, labor, and money in perfecting their invention, and when it is finished they come to Washington filled with the hope of those rewards which crown the labors of the successful inventor. Their application for a patent is presented and submitted to an experienced and skilful

examiner, who promptly refers the anxious applicant to a drawing or a model, which shows him that his ideas have been anticipated by another, and reduced to practice many years before. None but those who have taken pains to inquire into the subject can form an adequate idea of the amount of time, money, and labor which is uselessly expended under circumstances like these, to say nothing of the anxiety of mind and heart-sickening disappointment, all of which might be saved if such a descriptive index as I propose were readily accessible to the public. The publication of it would also tend to stimulate the inventive genius of the country, and lead not only to the development of new agents and processes, but to valuable improvements upon those which have already been brought into practical operation. It is hardly necessary to add that such a work would be of great value in the investigation by courts of justice of legal controversies involving the rights of patentees.

"When the index is completed up to the close of the present year, it will be easy, by an annual publication of an appendix to the ordinary Report from the Patent Office, to furnish a complete record of the inventions and discoveries of each successive year.

"To be of value, such an index should be prepared by a person fully competent to the task, and illustrated and printed, and bound in a style worthy of the subject and of the nation. It would doubtless be attended with a large expense, but it could readily be paid out of the Patent fund, without encroaching on the national treasury, and I can conceive of no purpose to which that fund could be applied which would be more acceptable to inventors, and in all respects so appropriate, as in perpetuating and diffusing the knowledge of their labors, and presenting to the public a full description of the existing condition of the mechanic arts, and the kindred branches of science in our country."

Occupation of the east wing—The information concerning the extension of the Patent Office building contained in the above extract, will be welcome to all who take an interest in the progress and encouragement of inventive skill. If the east wing, of which the Secretary of the Interior speaks, could be at once placed at the service of this Office, there would be no occasion, it is hoped, for many years to reiterate the complaint of want of space that it has so often and so justly made. Before that structure, and the one now occupied, can become insufficient, the other portions of the edifice will no doubt be ready for use. Unfortunately, it has been deemed necessary to reserve for the Department of the Interior the principal floor of the wing in question, containing apartments of which the Office stands in pressing need for the transaction of its current business, those now occupied for that purpose being wholly inadequate. Those who are conversant with the crowded state of the one in which the disbursing and the assignment clerks, with their assistant, are located, will not soon forget the perplexity and delay which arise from their being restricted to such narrow limits, and the confusion from which it is consequently impossible to entirely preserve the documents in their custody. The cases in the draughtsman's room are incapable of holding the portfolios of drawings continually resorted to for inspection, which are therefore piled upon them, and no little embarrassment in consulting them is thus created. Nor is it easy to maintain a proper secrecy respecting the caveat files which are

in his care. The library will not contain over two-thirds of the books now belonging to it, to say nothing of the additions it requires and is constantly receiving. The remainder are kept in the common hall, or scattered through the various offices. It has, besides, been found necessary to station in this apartment a desk for the clerk for recording letters, and another for a copying clerk, to the exclusion of tables and other furniture, such as are deemed indispensable in other libraries for the convenient use of the books. The messenger has no place for performing his duties but in the same open hall to which every stranger has unrestrained access. Even the letters, many of them containing money, are there enclosed, and the mail made up with a degree of exposure not to be tolerated. Matters which should have been kept strictly private, have, in fact, gained publicity through the want of suitable accommodations for this official, causing inconvenience and annoyance both to the Office and to the parties concerned. In the several examiners' rooms it has become impracticable to screen entirely from the visitor's gaze the models in pending applications. The secrets which inventors have guarded with jealous care, and have confided to our trust, are often exposed, in spite of every precaution that can now be taken, to agents, to rivals, or the more dangerous scrutiny of competitors. Complaint has been made, and it was feared on good grounds, that applications which were under examination had been discovered by strangers, who had taken advantage of it. Keenly as this must be felt, there is no help for it in the present situation of affairs. The Office has not been wanting in representing the evil to those who had it in their power to repair it and "did it not." So long as the public have a right to the necessary facilities for transacting business in this building, it is impossible to secure proper seclusion under such disadvantages. Should the design of excluding the Office from the apartments in question be persisted in, the evil must become more aggravated every day. A new examiner is urgently needed, and there is a fair prospect that Congress will grant one at its present session, as well as other important functionaries. There is not, however, a place at all suitable for them at our disposal.

In addition to what has been said above, and in former reports, on this subject, there is a grave objection to the plan of allowing any other department to occupy any portion of the Patent Office building. It is a matter of no small difficulty and nicety to give the public suitable facilities for transacting business, and for examining the building and the collections in it, on the one hand; and, on the other, to secure the privacy which applicants demand for their discoveries. It can only be effected while the Office has entire command of the building, and can exercise perfect control over its inmates. Admit within it a body of men, over whom the Office has no power, who may come and go as they please without being amenable to it, and the task will become impracticable.

With the utmost respect for those who advocate the project in question, the legality of it must also be denied. If we look only to the several statutes under which these buildings have been erected, there is no room for doubting that they were erected for the sole use of the Patent Office, and are dedicated to its service. The only provision which can be supposed to countenance a different view is the fifth section of the act approved August 31, 1852, making appropriations for the expenses of the government. By this section certain former appropriations for "com-

compensation of superintendent and four watchmen of the building occupied by the Secretary of the Interior" are "made applicable to the compensation of superintendent and four watchmen for that portion of the Patent Office building which will be occupied by the Secretary of the Interior." This, it is claimed, recognises and renders legal the contemplated movement. It is true that incidental expressions like the one above have been held to recognise proceedings which have actually taken place—measures which are in existence. If unlawful, Congress could not with propriety take notice of them, except by way of censure; and in making provision for them, it would acknowledge them as valid. Their nature and extent would be also well defined, and readily ascertained, and there could be no doubt as to what would be thus sanctioned. These reasons do not exist when a statute takes notice of a mere proposition still under deliberation. Not having been reduced to practice, there is no impropriety in making provision for it, in case it should be otherwise authorized. It would be dangerous, moreover, to legislate as it were hap-hazard, and give the sanction of a statute to a scheme, the circumstances, and character, and bearings of which were yet uncertain. The section adverted to can only be regarded as a contingent provision for a contemplated measure, to take effect when that measure should be otherwise made lawful; not an authority for it by itself. That is not its import, nor its design; it was framed for no such purpose.

Admitting the construction thus contended for to be well grounded, it would at most only justify the Secretary of the Interior in occupying such rooms as he actually selects for his own use. The remainder of the building must remain at the control of the Patent Office: so, also, must the whole structure, in virtue of the several acts for its erection, until the option has been exercised and the rooms designated for the other department. There is no warrant for the attempt to sequester an entire floor for an indefinite period, until it becomes convenient to make the choice. The terms of the act would equally sustain the exclusion of this Office from every part of the Patent buildings. The attempt is especially to be deprecated in view of the embarrassment it occasions.

The work has been commenced of removing the models belonging to rejected applications, usually termed "rejected models," to the rooms in the basement of the new wing. Those rooms will be required, if the business continues to increase at its present rate, for such clerks and other attendants as the public have no occasion to consult, and who can be located without inconvenience at a distance from that part where intercourse with strangers is conducted. For the present, they might be accommodated on the principal floor. It has become necessary, meanwhile, that the rejected models should be removed from the place where they have been kept, for the purpose of making repairs upon it. The plight to which they have been reduced for want of space is such as to elicit loud complaints from those who deposited them and feel an interest in their being preserved and suitably exhibited, as well as from others. They have been heaped upon one another, and upon the floor, lost from search, and exposed to injury. Many of them have been broken, their component parts scattered, and not a few entirely destroyed. It has become necessary that they should be thoroughly examined, and, as far as practicable, restored to their proper condition, and put in order. As soon, therefore, as the Office was notified that the new basement was about

to be placed at its disposal, it was decided to remove to it the models in question until the apartments which are to be appropriated to them in the portions of the building yet to be erected shall be ready. Temporary cases were therefore ordered, and, as was remarked, the removal of the models has been commenced. As far as practicable, they are at the same time restored to order, and are labelled and arranged anew. An index is also prepared, showing the place where every one is to be found, and enabling the Office hereafter to ascertain satisfactorily whether any of them are missing. This work will be vigorously prosecuted until it is complete, unless an alteration in our plan becomes necessary in consequence of being excluded from some portion of the wing.

Steps have also been taken to provide cases of a more permanent construction and suitable character to be placed in the hall of the new wing, for the reception of the patented models. These cases cannot, however, be prepared at once; indeed, several months must elapse before they will be ready for use. A similar course will be pursued in removing and arranging the patented models in them, as in case of the rejected models, only the work will be more thoroughly done, as it is supposed they will not have to be displaced.

The attention of Congress has been asked in former reports to several measures of legislation for the relief and convenience of this Office, and the benefit of inventors. It is proposed not so much to reiterate the observations already published as to suggest considerations respecting some of these measures, and to mention others that have not yet received their due share of notice.

Relation of the Patent Office to the Department of the Interior.—The attitude of entire dependence upon the Department of the Interior to which this Office has been reduced is followed by serious evils, and constitutes a prominent topic for consideration. The most important correspondence in which the Patent Office is engaged arises out of the investigation of inventions and discoveries presented for patents, and is employed in communicating the views entertained respecting them. These are the result of scientific and laborious investigations in each case, prosecuted by a corps of twelve able examiners and assistants. It is beyond the power of any one man, much less of the Commissioner, with his numerous other responsibilities, to become conversant with them, so as to satisfy himself of their correctness. He must necessarily adopt the conclusions formed by the examiners in the great majority of the cases, and act in reliance on their fidelity and judgment. He cannot feel safe unless he can repose implicit confidence in them, and he clearly ought to have the exclusive privilege of selecting them. These remarks will apply also to other officials. Yet the approval now required from the Secretary of the Interior may be so exercised as to deprive him of an independent choice in this matter.

Another result of the intimate relation into which the two offices are brought, is to subject them to the same political fluctuations. Few will deny this to be contrary to sound policy. Many considerations require that the post of Commissioner of Patents should be a permanent one. It seems plain that the mischief resulting from the present position of the Office which have been brought to notice above, and on former occasions, demand a change, and the elevation of this into an independent bureau.

Reorganization of the Patent Office.—The necessity of thoroughly

reorganizing the office seems to have been hitherto overlooked. Its present arrangement is to a great extent the mere result of expedients, resorted to, from time to time, as the pressure of business required. No well digested system can reasonably be looked for under such circumstances. Several of the officials, to whom are confided important trusts—pecuniary, as well as others—are recognised only through an incidental mention of them in some statute; their duties are nowhere defined. There are a number, besides, who are charged with responsible services, and are designated by courtesy accordingly, but who are known in law only as temporary clerks, and whose compensation depends upon a discretion, which may become caprice. There is not even any written code in the Office regulating the employments of these gentlemen; and the mode in which they are parcelled out betrays want of method. As it is a subject more properly within the province of Congress to correct, it is hoped that it will meet with early and effectual attention from that body. The department of the machinist especially requires remodelling and enlargement. Besides the rapid increase of the models, the removal which has been commenced of the entire number, their rearrangement and repairs, the disposition of new ones, the exhibition of them to visitors and inquirers, and the care of the whole, will require an addition to the force under his charge, which should be duly organized by law.

Need of a registry law.—It is not easy to perceive why two classes so analogous to each other as those protected under the law of copy-right and those which are patented as designs, should not be embraced under one statute. An engraving upon paper, or in any publication, needs only to be registered with the clerk of a district court, at a fee of fifty cents, and, upon depositing a copy with the Secretary of State, it is secured against infringement for twenty-eight years. If the same design is printed on silk and sold as a handkerchief, or upon paper-hangings or a fire screen, a formal application must be made to this Office, a patent prayed out, costing \$15, besides the expenses attendant on procuring papers, drawings and model; and, after all, an exclusive privilege in them inures but seven years. These incongruities indicate such a want of systematic legislation as to warrant the hope that they may be wiped from the statute-book by the enactment of a registry law covering all these subjects. The registry should be in the district court as now; to make it in this Office gives it too much the prestige of a patent.

The law now requires that a patent should be extended, if it all, before it expires; and previous to that time whatever controversy arises in such a case must be considered and determined. On the other hand, in order to decide the question, it is necessary to ascertain whether the applicant has not already been remunerated sufficiently for his invention, and for this purpose he is bound to exhibit a sworn statement of his receipts and disbursements on account of it. It is obvious that this statement should be made not long before the patent expires, as it might be materially varied by intervening transactions. Accordingly, applications presented a year before the patent expired have been rejected for that reason, and they are usually presented not more than three or four months previous. The opportunity for considering and determining the question is thus restricted to very narrow limits. In one late instance, the Commissioner had but twenty-four days, in a hurried pe-

riod, to hear arguments, examine several thousand pages of testimony, and satisfy himself on a number of difficult questions of law, before making a decision which involved, it was claimed, a million of dollars. The ends of the statute will be attained by requiring the proceedings to be closed before the Commissioner by the day now fixed for the decision, and allowing him such further time as he needs for forming his opinion.

Patent law amendments.—Emendations of the law, intended to give better security to inventors in the enjoyment of their rights, have been brought forward, from various sources, by associations interested in the subject, or individuals. Others have been proposed by this Office; and some have been introduced into the halls of Congress, and have been received with favor. The remedies proposed have not always been in unison with each other, and show the need of caution in adopting them. The attention they have met with justifies the devoting a few pages to them, not for the purpose of fully discussing them all, but in order to secure consideration to some suggestions which might otherwise be overlooked.

One of these emendations provides that, when a patent has been denied by the Commissioner, the applicant, if he still insists upon it, may have one upon his own responsibility. Before this becomes a law, it should be radically amended upon two points. It should be enacted that a patent thus issued should not, like those granted from this Office, be entitled to any presumptions in its favor, nor be regarded as *prima facie* evidence of the patentee's exclusive title. It should also be required that a marked and obvious distinction should be observed between the instruments obtained in these two methods, and they should be so framed as to remove all apprehension of the one being mistaken for the other. The machinery and manufactures protected by such a proceeding should bear a stamp disclosing to every one the true extent of the patentee's rights. Effectual precaution should be taken, in short, against the instrument being made use of as an official recognition of the claim, and against any person being imposed upon by the articles, as though they were protected from infringement under the existing law. The best mode of effecting this would be to give the applicant a mere right to register his invention in some distinct office, or with copyrights.

It is by no means certain that, with these precautions, such an addition to the present system might not be found advantageous. To carry out the principle, the right of appealing from the decision of the Office should be taken away. The party aggrieved might have his remedy by taking out a patent or registering his invention as thus provided, upon his own responsibility, and look to the courts for sustaining it. Other regulations might appear desirable on discussion, for which this is no place. This arrangement would obviate the difficulty now so commonly felt in finding a suitable tribunal for revising the action of this Office. It would also help to silence the complaints made against the system now in force, and give those who desire it all the benefits of the one formerly in vogue.

To secure the aid of experts upon the trial of patent causes is also a favorite project. That some such measure is desirable is admitted on all hands; but it should not stop short, if undertaken, of a permanent appointment of a suitable board, instead of relying upon an occasional resort to the class. The man who is called to serve upon a single cause will find it more difficult to preserve strict impartiality between the parties, and to maintain the appearance of it, than one to whom the duty

has become familiar. The judge, too, finds the resentment he awakens on one occasion counteracted by the better impressions he makes upon another, and those who have both won and lost in repeated instances, lose the prejudice they would have entertained had they appeared but once before him and met defeat. An arbitrator, forced upon a party for a single occasion, can never give satisfaction to the loser. After a few repetitions of the clamor that would be raised on every trial, the community will, it is apprehended, cease to endure such a substitute for their favorite trial by jury.

There seems little ground for another innovation that has been proposed, that of restricting the right of defence in a suit for infringing a patent, on the ground that it was not novel, to those who knew before the patent was granted of the invention having been in use; while those who acquire the knowledge afterwards are required to institute distinct proceedings to vacate the patent. When any one has satisfied himself that a patent is void, why should he be held to respect it, or engage in expensive litigation to avoid it, while his neighbor may infringe it with impunity, because he gained the knowledge a little earlier? If any distinction is to be made like this, it should be between him who knew the patent was void before he committed the supposed infringements, and who must be supposed to have acted in view of his rights, and him who had no such knowledge, and trespassed with no such excuse. Even he is presumed to know the existence of the patent; and why should he not be presumed to know its invalidity, and permitted to show it in his defence?

The expedient of declaring forfeit the machinery employed and the articles manufactured in violation of a patent, should be carefully framed, so as to give the owner notice of the claim and enable him to meet it. The device does not, moreover, seem well calculated to punish the wary and designing speculator, who will be on his guard and leave nothing worth taking exposed. It will fall with severity upon those who are comparatively thoughtless and innocent, and who have never taken any precautions. A jury is liable to mistakes, and might find even such a man guilty of wilful wrongdoing.

In connexion with the last, it has been proposed to require of the defendant securities for the payment, in all cases where extra damages and costs might be recovered before he is permitted to make a defence. It may be true that irresponsible persons have been put forward to do the ostensible work of infringing, and that for them a judgment has no terrors. On the other hand, it is equally possible that innocent persons may be sued, and suffer by the obnoxious provision. Justice does not, however, permit any one, before he is found guilty, to be treated as such. His property may, in some States, be sequestered; or he may be held to bail; and this may embarrass him, but does not shut his mouth. Under the proposed plan the plaintiff might entirely debar him from showing his innocence, or even demanding the proof of his guilt.

Another measure was brought forward from the same quarter, by which it was provided that, after one trial establishing the validity of a patent, the patentee may recover treble damages and treble costs if it is ever contested again; quadruple on a third trial; quintuple on every subsequent trial, with "liberal counsel fees" in every instance. It is not necessary that the defendant should have been a party to the previous suits in order to make him liable to the severe operation of this statute.

He may have lived at the other end of the Union, and have never heard of them; he may have supposed himself to have a *bona fide* defence, founded upon his having anticipated the plaintiff in his discovery. It will avail him nothing. In addition to this, it is well known that speculators in patents have obtained judgments upon them by collusion for the sake of effect. How easy to use them to enhance the costs under this proceeding. The statute as proposed, it is true, provides that the previous judgments must be in good faith. But how is their character to be shown? To impeach a fraudulent judgment is, at all times, a costly and hazardous undertaking. And when it is attempted at the risk of such aggravated recoveries, the odds are too great to be risked by any man of prudence, who can avoid it. It is true, also, that the plaintiff is liable to treble costs upon a third verdict against his patent; quadruple upon a fourth; and quintuple on all subsequent ones; not treble upon a second trial, and so on as when he succeeds. But it is also provided that, where judgments have been recovered both ways, they shall be adjusted and balanced against each other. Not to ask who shall keep the account for the defendants and make the necessary proof, it is obvious that the facility with which the plaintiff can obtain amicable verdicts, and the difficulty of exposing them, make this precaution useless. It has been the subject of loud complaints throughout the country that patentees and their agents have gone about levying contributions upon those who used their supposed inventions, and have met with great facilities from the dread commonly entertained of engaging in litigation with them. If these complaints have any foundation, what might not be expected from one who wielded such a formidable weapon as this provision places in his grasp? Very few men could be found who would not make large sacrifices rather than expose themselves to a judgment for five-fold damages and five fold costs, with liberal counsel fees, besides being compelled to find security to the amount, before being allowed to so much as contest their guilt.

Severe and aggravated as are the wrongs and depredations endured by inventors, they do not warrant measures for protection so liable to be abused, and made to operate with indiscriminate hardship upon the innocent as well as the guilty. They savor of what Bacon has called the last infirmity of a good man—indiscreet indignation against vice. The remedy for the evils complained of is not to be found by listening to the dictates of resentment, however just. There are serious difficulties in the way of devising an effectual one—so serious as to render it less surprising that measures such as have been discussed should have met with favor. It is respectfully suggested, however, that, if those who infringe upon these rights with so much recklessness and impunity are ever to be checked, it is by a careful inquiry into the circumstances to which they owe their success. Two things contribute to it. One is that every valuable invention becomes an object of importance to a large circle, sometimes embracing the entire community, who are therefore strongly tempted to resist a patent for it, and are at once tacitly leagued, if not expressly combined, against it. Another is the facility of manufacturing proof of like discoveries previous to that of the inventor, and dating them so far back as to render it difficult, if not impossible, to detect the fraud. Until these are counteracted, there is little to hope from legislation, however stringent. The object may possibly be secured by pro-

viding for a final and conclusive determination upon the validity of the patent at a date so early that people would not have generally become aware of its value, or interested in opposing it and concocting schemes against it; and, also, while any alleged previous use may be readily inquired into, and its true claims thoroughly scrutinized. A law may be framed, for instance, under which public notice shall be extensively given of the nature and object (so far as necessary) of every invention upon which a patent shall be granted, and all competitors shall be required to show cause against its validity by a specified day. If any party comes forward within the time and files objections, an investigation shall be made into the claims of the invention, and the adverse parties shall be heard in opposition to it. And when a patent has survived this ordeal, the validity of it shall never afterwards be contested. If such a statute could be drawn up, giving ample notice to all concerned, and otherwise free from objection, it is obvious that it would forestall the combinations and practices which have rendered the value of patents precarious almost in proportion to their usefulness. Whether such an act can be made effectual and practicable, yet do no injustice, is a question that seems worthy of serious consideration. It will be time to discuss its form and mature its provisions when it promises to become the subject of legislative deliberation.

It may not seem consonant with the observations recorded a few pages back to venture an opinion in favor of making the wilful infringement of a patent a crime, and punishable as such. The measure is, notwithstanding, free from the objections urged against the stringent projects there commented upon. In criminal prosecutions there is a strong presumption raised in favor of the respondent's innocence, and the danger is slight of his being convicted unless he is truly guilty. He is secure where the defendant in one of those suits would be exposed to serious peril. Neither would it be safe to use a threat of such proceedings as a weapon of extortion. On the other hand, it would deter many a man from the offence. Hundreds who have made up their minds to risk a pecuniary loss, would hesitate to subject themselves to the imputation of crime. It would serve, also, to correct the public sentiment, which is far from being just on this subject. Who shrinks from the temptation to infringe a patent as he does from the thought of breaking the law? It is from a defect of this kind that tribunals of justice, and especially juries, are found reluctant to give due protection to the rights in question. Correct this state of feeling, attach to the secret trespasser upon his neighbor's patent the stigma of transgressing the laws, and the offence might possibly become as rare as others which are committed not from want, but the mere love of money.

Importance of the Arts.—It may be thought that these subjects have been urged upon the attention of Congress beyond what their merits warrant; that they have no title to the amount of consideration which would be necessary to secure a judicious, thorough, and advantageous action upon them. It is respectfully submitted, however, that they justly challenge comparison, in point of intrinsic importance and of their bearing upon the prosperity of our country, with any upon which the national legislature have been usually employed. Not that ingenious discoveries and improvements in the arts are before all other sources of benefit to our fellow-citizens. I cannot concur in the terms of disparagement which the enthusiastic admirers of inventive genius have sometimes used to-

wards the great masters of belles-lettres and the fine arts. He who said, "Let me furnish a nation its ballads, and I care not who makes its laws," had a far more just and comprehensive view of the influences that mould the structure of society, give a people their character, and secure their true advancement.

The progress of invention has not been without its influence, meanwhile, upon the destiny of man. In the great work of elevating the masses, of giving to the entire body of mankind something like an equal opportunity in the race for happiness, and even power, it has co-operated with mighty effect. It has so reduced the cost of the comforts of life, and of the means of knowledge, as to bring them within the reach of every one. An immense amount of work, which could be performed by the hand alone a few years since, is now accomplished by machinery. Intelligent labor has come into demand, and receives an increased emolument; so that men can at once earn more than formerly, and their wages command subsistence, luxuries, and means of cultivation to an extent that previously had never been realized. Where these advantages are shared, experience tells us the entire mass of society is elevated in the tone of its morality, as well as the character of its enjoyments. It is true, as it never was before, that men are the architects of their own fortunes; that it depends upon themselves what they shall be. To render this complete, demands other aids, it is true. Religion and education must co-operate. Political institutions of the right stamp are also needed, as England may well teach us by the multitudes she possesses destitute of the thousand comforts produced in their midst, at the lowest cost, by her wonder-working machinery. But inventive skill must bear a part, and contribute to the final result. To the people as individuals, and to our State governments, it belongs to sustain the institutions of religion and of education, and to provide salutary municipal regulations. It is the province of Congress, meanwhile, to foster the genius of discovery, and, by its wise legislation in this behalf, lend its aid to advance the interests of humanity.

It was in another view, however, that a comparison in point of importance was challenged between the inventive interests of the country and those which usually engross attention in the halls of the Capitol. Our manufactures, to protect which has been the object of so much debate, owe their very existence to them. Without them our foreign commerce, another favorite, would lose freight as well as power. Where, for instance, would be her exports were it not for the cotton gin? and where her speed and regularity were it not for the steam-engine? Even agriculture feels the influence, and under the touch of the genius of invention promises to fulfil the much-sought desideratum, and make two blades of grass grow where one grew before. The great element of expense in the production of her fruits—manual labor—will be so supplanted by machinery as practically to effect the same purpose of cheapening them. Compare our means of inland intercourse with what they were a few years since, and another indication is afforded of the consideration due to inventors. The difference in our domestic traffic, as it was and as it is, we owe, in a great measure, to their ingenuity. They have done an immense work in building up the wealth of the country; they have given the nation standing and weight in the eyes of foreign States; they have entered into competition with their artisans in their ap-

propriate fields, and have borne away a palm that reflects honor upon our land. At the great Exhibition it was freely admitted, by such as were never accused of partiality towards us, that Great Britain had gained more useful ideas from the United States than from all other sources. Those who have achieved so much for the nation are not to be deemed importunate, therefore, when they request such legislation at the hands of Congress as shall afford them effectual protection in their acknowledged rights, and shall enable them to prosecute their meritorious labors in peace.

Lists of Patents and Examiners' Reports.—Upon the succeeding pages will be found the usual lists of patents expired and patents issued, with the inventions and claims.

These will be followed by reports from the several examiners, describing some of the most important of the inventions which have been passed at their respective desks. This information has always been looked for with great interest, and conveys to the mass of readers a better conception of what is transpiring in the fields of discovery than they obtain from any other source. Should the bill be passed which is now before the Senate, authorizing the insertion of an intelligible account of the inventions patented, in lieu of the incomprehensible list of "Inventions and Claims" now published, those reports will become unnecessary. Meanwhile, they cannot well be dispensed with. Allowing their full force to the objections urged against them last year, they are not felt to be so serious as to require the omission of what constitutes so essential a part of "the information of the state and condition of the Patent Office" contemplated by the statute.

Guide to the practice of the Patent Office.—Upon reprinting the pamphlet issued from time to time by the Office, giving information to those having business to transact with it, so many errors were found to have crept into the work, in the course of repeated editions, that it was concluded to rewrite it. The new work will be found on the subsequent pages. The forms were collected in an appendix; but, as they have not been materially changed from those which appeared in the last Report, they are here omitted, with the exception of one or two new ones.

At the close will be found an opinion prepared by the Commissioner upon deciding the application for the extension of a patent before alluded to. It was not heard until the year we are contemplating had expired; yet having been determined before this Report could be rendered, it was deemed advisable that it should be inserted. The decisions of this Office constitute precedents, and have an essential bearing upon questions that are becoming every day more frequent and of greater consequence. It is highly proper that the more important of them should be published in the annual reports, which form a legitimate channel for communicating them. As the decision spoken of involved several novel and grave questions of law, and the case was argued at great length and with more than ordinary ability, it will be often referred to hereafter, and constitutes, therefore, a suitable precedent for the practice. For the same reason such decisions of the judges of the circuit court of the District of Columbia, upon appeals from this Office, as involve questions of law or practice, should find a place in the annual reports.

The only communication received during the year respecting early American inventions will be found on the pages following the Examiners' Reports.

II.

CLASSIFIED LIST OF PATENTS THAT HAVE EXPIRED DURING THE
YEAR 1852.CLASS I.—*Agriculture, including instruments and operations.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Beehive and beehouses	John Searle	Hill, N. H.	Jan 20
Churn	Step'n P. W. Douglass.	Lansburg, N. Y..	Jan 9
Churn	Joshua G. Pike	Lisbon, N. Y.	April 28
Churn	Rufus Porter	Billerica, Mass.	May 10
Churn	Enoch Thomas	Harrisonburg, Va.	May 30
Churn	Daniel Osgood, jr.	Blue Hill, Me.	July 9
Corn shelling	Thomas Wright	New Village, N. J.	June 12
Corn shelling	James W. Webb	Mount Morris, N. Y.	July 16
Corn shelling	Rufus Porter	Billerica, Mass.	Sept. 12
Corn shelling	Lester E. Dennison ..	Saybrook, Conn.	Oct. 8
Cultivator, corn-plough	John Hernly	East Hempfield, Pa.	Dec. 10
Cultivator and weeder	Simeon W. Marshall and J. W. Coburn.	Dracut, Mass.	Oct. 3
Cutting grass and grain	David Lewis, jr.	Bern, N. Y.	April 14
Cutting grass and grain	Ira Wheeler	Salem, N. H.	May 30
Cutting, scythe, hanging	Jos. Clapp and Erastus S. Clapp.	Montague, Mass.	July 16
Cutting, scythe snath	Samuel Puffer	Sunderland, Mass.	April 7
Flax or hemp, gathering	Wm. Brittain and John Silvers.	New Hope, Pa.	Nov. 25
Hay, preserving, &c.	A. D. Ditmars	Chester county, Pa.	Feb. 15
Hoe, fastening handles to	George Hight	Gorham, Maine	May 25
Hulling clover seed	Daniel Hunsicker	Hartley, Pa.	May 8
Hulling clover seed	Jacob Flook, of John ..	Middlesex, Md.	May 10
Hulling grain and cleaning	Jeduthan Cross	Centre Lisle, N. Y.	Oct. 8
Hulling rice and barley	Eleazer Carver	Bridgewater, Mass.	Sept. 22
Hulling rice, mortar, for dressing ..	James J. Cordes	London, England	Sept. 19
Hulling rice and rubbing wheat, (antedated August 11, 1837.)	Alfred Duvall and Wil- liam J. Duvall.	Baltimore, Md.	Jan. 9
Lime, &c., spreading	Daniel F. Hill	Plainfield, N. J.	Feb. 10
Plough	William T. Sprouse ..	Sangamon, Ill.	Feb. 15
Plough	Henry Taylor	Montague, Mass.	May 17
Plough	D. Prouty and J. Mears.	Boston, Mass.	Sept. 15
Plough	John Deats	Roxbury, N. J.	Nov. 25
Plough, cast-iron, malleable	Cyrus Alger	Boston, Mass.	Aug. 3
Plough, clevis	Aaron Carman	Columbus, N. J.	June 20
Plough, hill side	Isaac Teeter	Johnstown, Pa.	Oct. 3
Plough, hill side, double	Martin Rich	Ithica, N. Y.	May 24
Plough, mould board, double	Stephen Gregory	Sawpits, N. Y.	Nov. 14
Plough, self-sharpening	John Ormiston	Centre, Ohio	Mar. 17
Plough, self-sharpening	John W. Post	Baltimore, Md.	Oct. 8
Rake, hay	Daniel Smith	Vincennes, Ind.	June 7
Rake, hay	William Buckminster ..	Framingham, Mass.	July 12
Seed, drill for sowing	George A. Hoyt	Albany, N. Y.	April 21
Seeding all kinds of seed	William Buckminster ..	Framingham, Mass.	Oct. 8
Seeding, corn-planter	Elisha Bunce	Westford, Mass.	July 16
Seeding, sowing and planting ruta- baga.	Hiram R. Merchant ..	Guilford, N. Y.	Jan. 20
Smut machine	John Parker	Sunbury, Ohio.	Aug. 23
Smut machine, rubbing garlic from wheat.	Z. Duvall, A. Callegan, and Jos. Miller.	Ellicott's Mills, Md.	Nov. 3
Smut machine and cleaning rice, (additional improvement Au- gust 12, 1841.)	Daniel H. Southworth.	Little Falls, N. Y.	Aug. 23

II.—*Classified list of expired patents—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Straw cutter.....	Jonathan S. Eastman..	Baltimore, Md.....	Feb. 15
Straw cutter.....	William J. Duvall ..	.....do.....	Mar. 28
Straw cutting.....	Edwin Gillett.....	Ellington, Conn.....	Jan. 9
Straw cutting.....	Ebenezer Dewey.....	Butternuts, N. Y....	June 4
Straw cutting.....	Samuel Gilson.....	Arcadia, N. Y.....	June 27
Straw cutting.....	John Boynton.....	South Coventry, Ct..	Nov. 25
Straw cutter, horizontal.....	Robert A. B. Beach...	Williamson co., Tenn.	April 24
Thrashing clover seed.....	William B. Davis.....	Reading, Ohio.....	June 20
Thrashing clover seed.....	William Rowe.....	Frederick, Md.....	Aug. 25
Thrashing grain.....	L. Yale, S. W. Stim- son, and N. Stimson.	Little Falls, N. Y....	May 17
Thrashing grain.....	Amoni West.....	Greene, Maine.....	July 26
Thrashing grain, hulling, &c.	Hor. W. Waterhouse ..	Butler county, Ky....	Mar. 21
Thrashing grain and shelling corn..	Myron J. Gilbert.....	Troy, N. Y.....	Jan. 20
Thrashing machine.....	Frederick and H. Grieb.	Hagerstown, Md.....	Oct. 19
Thrashing machine, clover, &c....	Samuel Kern.....	Strasburg, Va.....	May 8
Thrashing machine, conveying straw from.	Uriah Beebe.....	Clarendon, N. Y....	Mar. 28
Thrashing machine, preventing dust from rising.	Joseph Ross.....	Bound Brook, N. J..	Oct. 8
Thrashing and winnowing machine.	Reuben W. Currier ...	East Kingston, N. H.	Sept. 17
Trees, fruit, preventing canker worm in.	Jonathan Dennis, jr. ..	Portsmouth, R. I....	June 21
Winnowing grain.....	David H. Cole.....	Portland, Me.....	July 17
Winnowing grain.....	George A. Johnson....	Johnsonburg, N. Y..	Dec. 15

CLASS II.—*Metallurgy and manufacture of metals and instruments therefor.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Awls, attaching to hafis.....	Dexter Pierce.....	Montague, Mass....	Aug. 13
Axes.....	J. Wright, (assignee of D. C. Stone.)	Naponock, N. Y....	April 21
Axes, hatchets, punching eyes, &c.	Elisha K. Root.....	Collinsville, Vt.	Dec. 10
Boring the inside groove, fliers for double speeders.	James S. Brown.....	Pawtucket, Mass. ..	July 9
Castors, for bedsteads, (reissued July 30, 1845.)	Philos B'ake, Eli W. Blake, & J. A. Blake.	New Haven, Ct.....	June 30
Copper, alloying, &c.....	M. Sorel.....	Paris, France.....	Sept. 17
Currycombs, making.....	Nathaniel C. Sanford..	Meriden, Conn.....	Nov. 3
Door springs.....	William Wilson.....	Greenfield, Mass....	July 17
Drill stock, geared.....	George Page.....	Keene, N. H.....	May 8
Filing hand-saws.....	James S. Harris.....	Poultney, Vt.....	June 21
Forges, backs, (additional improve- ment August 23, 1838)	Luke Wilder.....	Leominster, Mass....	Mar. 17
Forge, smiths'.....	Amos Bissey.....	Point Pleasant, Pa...	June 23
Furnace, blast, draught of.....	Asahel Collins.....	Ulster, N. Y.....	Dec. 31
Furnace, blast, hearth of.....	George Poe.....	Elkridge Land'g, Md.	June 23
Furnace, blast, heating air for.....	Charles C. Alger.....	Stockbridge, Mass....	June 30
Furnace, manufacture of iron.....	Isaac C. Bryant.....	Philadelphia, Pa. ..	Dec. 31
Furnace and pots for melting.....	Cyrus Gridley.....	Waterbury, Conn....	Mar. 17
Furnace, refining iron.....	James Sharp.....	Liverpool, Pa.....	June 23

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Furnace, smelting lead.....	A. R. Drummond and N. G. W. Fuller.	Galena, Ill.....	1838. May 30
Furnace, smelting ore.....	J. Baughman, J. Gui- teau, and H. High.	Herford township, Mauch Chunk, Pa.	May 21
Hinges, butt.....	Charles R. Macey.....	Hyde Park, N. Y....	Oct. 5
Hinges, helical spring joint.....	D. A. Hoyt and P. W. Bulkeley.	Danbury, Conn.....	April 28
Iron, manufacturing.....	George Craine.....	London, England...	Nov. 29
Iron ore, smelting.....	Joseph Richards.....	Philadelphia, Pa....	Dec. 10
Knives and forks, table.....	George Ropes.....	Portland, Maine.....	May 10
Lock, door.....	Turner Whitehouse...	Boston, Mass.....	June 14
Lock, door.....	Daniel Ball.....	Kingsbury, N. Y....	July 12
Lock, door.....	Robert Wilson.....	Burdett, N. Y.....	May 10
Lock, door, for banks.....	James McClory.....	New York city.....	June 19
Locks, manifold permutation.....	Robert Newell.....	do.....	Sept. 25
Locks, mortise.....	Leonard Foster.....	Boston, Mass.....	June 27
Locks, trunk.....	Joseph Nock.....	Philadelphia, Pa....	Oct. 10
Locks, trunk, &c.....	Henry C. Jones.....	Newark, N. J.....	Dec. 15
Nails and spikes, heading.....	Rencore Dare.....	Ridgton, N. J.....	Jan. 27
Nails and spikes, wrought.....	Richard Savary.....	Pittsburg, Pa.....	April 2
Pipes, leaden.....	R. M. Seydle and Louis Ward.	Milton, Pa.....	Aug. 1
Punch, revolving spring.....	Solyman Merrick.....	Springfield, Mass....	Mar. 17
Punching and shearing iron.....	Lemuel T. Pope.....	Boston, Mass.....	Mar. 17
Rolling mill, for circular saws.....	Eleazer Carver.....	Bridgewater, Mass...	Sept. 27
Saw, circular, cutting teeth in, (an- tated March 19, 1838.)	Thaddeus Sellick.....	Philadelphia, Pa....	Sept. 19
Saw, for sawing ice.....	John Barker.....	Cambridge, Mass....	Feb. 3
Saw-set.....	E. Waste, N. Wellin- ton, and D. Hutchins.	Bernington and Shaftsbury, Vt.	Mar. 28
Screws, cutting wood.....	Jas. Keene and Thos. Keene.	Haverstraw, N. Y....	July 9
Shears, flying, manufacturing.....	Seth Parsons.....	Hoosick Falls, N. Y.	June 7
Sockets, iron, making.....	Leo. Morse, (assignee of Harvey Pettee.)	Foxborough, Mass..	Dec. 28
Spoons, plating, mill for.....	Sanford Boon.....	Hamilton, N. Y.....	July 19
Steel, converting iron partially into.	Walter R. Johnson....	Philadelphia, Pa....	June 30
Steel, increasing the strength of....	Walter R. Johnson....	do.....	July 9
Vice, bench, metal.....	Jas. Keane and Thos. Keane.	Haverstraw, N. Y....	Aug. 20
Window, spring fastener.....	Jonathan Bacon.....	Bedford, Mass.....	June 20

CLASS III.—*Manufactures of fibrous and textile substances, including machines for preparing fibres of wool, cotton, silk, fur, paper, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Calico, &c., printing.....	Godfrey Woone.....	London, England...	1838. April 2
Calico, &c., printing.....	Bennet Woodcroft....	Hardwick, England..	April 5
Calico, &c., printing.....	Alden Sibley.....	Pawtucket, Mass....	July 9
Cards, wool.....	George Faber.....	Canton, Ohio.....	Aug. 1
Carpeting and rugs.....	John Humphreys.....	New York city.....	Dec. 10
Cordage, rope, twisting strand.....	Moses Day.....	Roxbury, Mass.....	Feb. 7
Cotton, separating trash for.....	Jacob Idler.....	Philadelphia, Pa....	Dec. 31
Flax and hemp breaking.....	Andrew Forsyth.....	Columbia, Tenn.....	Jan. 9

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Flax and hemp breaking.....	Alvin Keyes.....	Crittenden, Ky.	April 4
Flax and hemp, &c., hatchelling. ..	Foster Demasters.....	Shelbyville Ky.	Nov. 20
Gin, cotton.....	William P. Baker.....	Boston, Mass.	Nov. 20
Gin, cotton, roller.....	Elcazer Carver.....	Bridgewater, Mass..	Sept. 27
Gin, cotton, saw ribs for.....	Eleazer Carver.....	.....do.....	June 12
Hats and furs, coloring.....	Harmon Hubbard.....	Attica, N. Y.	May 25
Loom, power.....	Eljah Fairman.....	Stafford, Conn.	Feb. 6
Loom, power.....	Wm. B. Pender and N. C. Horn	Wolfeborough, N.H.	Aug. 15
Loom, power and common.....	Benjamin Lapham....	Saratoga, N. Y.	Jan. 20
Loom, power, friction to yarn beam.	Stephen Kimball.....	Putney, Vt.	May 30
Loom, power, treadle in.....	Eli Horton.....	Stafford, Conn.	Feb. 22
Loom, sattinette.....	John D. Sedgrave.....	Uxbridge, Mass.	May 17
Loom, temples.....	Emory A. Augell.....	Killingly, Conn.	Oct. 19
Loom, weaving knotted counter- panes.	Erastus B. Bigelow....	W. Boyleston, Mass.	Jan. 6
Loom, weavers' harness for.....	J. Thorp and W. G. Angell.	Providence, R. I.	Dec. 31
Napper, metallic.....	John M. Pratt.....	Dudley, Mass.	Oct. 3
Oakum, picking.....	Hiram Burnham.....	Boston, Mass.	Oct. 5
Paper, brown, from beach grass...	Isaac Sanderson.....	Milton, Mass.	Feb. 22
Paper, engine regulator.....	Jno. M. Hollingsworth.	Braintree, Mass.	Dec. 31
Paper, preparing husks to make....	Homer Holland.....	Westfield, Mass.	Aug. 13
Rags, dusting.....	Enoch Burt.....	Manchester, Conn. ...	Sept. 14
Rags, dusting and tearing.....	Henry Clark and Wm. Albertson.	New London, Conn.	Sept. 19
Rags, washing.....	Robert Carter.....	Elkton, Md.	Feb. 22
Shearing woollen cloth, (antedated October 7, 1837.)	Reuben Daniels.....	Woodstock, Vt.	April 7
Shearing woollen cloth, (antedated May 25, 1838.)	Seth Parsons.....	Hoosick Falls, N. Y.	Nov. 25
Silk, reeling.....	Jonathan Dennis, jr. .	Portsmouth, R. I.	Dec. 23
Spinning, fliers, flax and hemp....	H. Evans and B. Churchill.	Plymouth, Mass.	Sept. 26
Spinning, fliers and spindles, cotton.	Richard E. Yerkes...	Philadelphia, Pa.	June 12
Spinning, fliers and spindles, cotton.	John Hoarth and Na- than Jones.	Andover, Mass.	Dec. 28
Spinning machine, domestic.....	Hiram F. Wheeler....	Springfield, Pa.	April 25
Spinning mule, self-acting, (ante- dated February 20, 1834.)	James Smith.....	Perth, Scotland.....	June 27
Spinning silk, &c.....	Harrison Holland....	Northampton, Mass.	Oct. 10
Spinning, silk, doubling and twisting.	Jonathan Dennis, jr. .	Portsmouth, R. I.	Dec. 23
Spinning, speeder, cotton roving...	William Mason.....	Taunton, Mass.	May 4
Wool, cleaning from burs.....	Theodore Ely.....	Poughkeepsie, N. Y.	Sept. 17

CLASS IV.—*Chemical processes, manufactures, and compounds, including medicine, dyeing, color-making, distilling, soap and candle-making, mortars, cements, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Bark, evaporating the extract of....	George W. Klein.....	Boston, Mass.	Dec. 15
Bleaching cotton and linen.....	Lemuel W. Wright....	Now in England....	Mar. 3
Brewing beer.....	Thomas Bohan.....	Norwich, N. Y.	Aug. 1
Cement, bituminous.....	Cyprian Poullalier....	New York.....	Mar. 3

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Dyeing, art of.....	Patrick Magennis.....	Patterson, N. J.....	April 21
Dyeing wool	Felix Fossard	Philadelphia, Pa.....	April 21
Dyeing yarn from the beam, (reissued May 28, 1840; additional improvement April 17, 1841.)	William Spencer.....	Lowell, Mass.....	Sept. 25
Evaporator	Samuel T. Harrison...	Baltimore, Md.....	Dec. 31
Extracting color from dye-woods..	Laurens Kent	Dorset, Vt.	Sept. 27
Gas meters, self-acting, dry	Samuel Clegg.....	G. Britain, England ..	Sept. 22
Gum elastic, manufacturing.....	Charles Goodyear.....	Roxbury, Mass.....	July 24
Leaching ashes	Elijah Williams	Westfield, N. Y.....	Jan. 9
Lead, white.....	William Cumberland..	New York city.....	June 7
Lead, white.....	Homer Holland.....	Westfield, Mass.....	Nov. 3
Mineral water, soda fountain.....	Lansing B. Swan.....	Rochester, N. Y.....	Nov. 3
Salt, manufacturing	Charles G. Reynolds..	Kanawha, Va.....	Mar. 3
Salt rheum, remedy for.....	Wm. B. Trufant.....	Bath, Me.....	Feb. 10
Starch, machine for washing and pulverizing potatoes for.	Sylvanus Richardson..	Jericho, N. Y.....	Jan. 9
Sugar boiler, circulating	Francis Hoard.....	Demerara, W. I.....	May 30
Sugar, manufacturing from beets...	Joseph Hurd, jr.....	Boston, Mass.....	July 26
Tannin, extracting.....	Augustus A. Hayes...	Roxbury, Mass.....	July 12
Vegetable wash for the lungs.....	George Rogers.....	Northampton, Mass.	Dec. 31

CLASS V.—*Calorifics, comprising lamps, fireplaces, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Air, heating, for the hot blast in furnaces.	Joseph Jones.....	York, Pa.....	Dec. 10
Fireplace, parlor and kitchen.....	John Hagerty	Monroe, Mich.....	Mar. 24
Flues, &c., of kitchen ranges.....	Samuel Pierce	New York.....	Feb. 21
Flues of open fireplaces.....	Thomas Whitson.....	New York city.....	June 14
Fuel, composition for	John Allen.....	.....do.....	Mar. 17
Fuel, preparing, and stoves to use therewith.	Thomas Joyce.....	Camberwell, Engla'd.	Nov. 12
Furnaces, portable.....	Jordon L. Mott.....	New York city.....	Oct. 19
Furnaces of stoves.....	Eben. Eaton.....	Troy, N. Y.....	Jan.
Gas burner	Antoine Arnoux.....	New York city.....	June
Grates, open, for burning coals....	James Atwater.....	New Haven.....	Nov.
Grates, in stoves, lowering and raising	Josiah Dutcher	New York city.....	June
Heating buildings, (antedated Jan. 30, 1832.)	Angier M. Perkins....	Now in London.....	Aug. 20
Kettles, sugar, setting, (additional improvement Dec. 11, 1838)	James Malory.....	New Orleans, La....	Sept. 20
Kiln, charring, coal	Michael Carrol	Tellico Plains, Tenn	April 28
Lamps, &c.....	Samuel Rust	New York city.....	Jan. 9
Lamps, &c., (antedated April 2, 1838.)	Samuel Rust .....	.....do.....	June 7
Lamps, &c.....	John C. Fletcher.....	Springfield, Ohio....	July 12
Lamps, &c.....	Joshua T. Beale.....	London, England ..	Nov. 29
Lamps, coach.....	William Lawrence.....	Wallingford, Conn..	April 7
Lamps, patent.....	Samuel Rust	New York city.....	Jan. 9
Lamps, shade to.....	Samuel Rust .....	.....do.....	Jan. 9
Lamps, signal.....	Jos. Feinour and Jos. Feinour, jr.	Philadelphia, Pa....	Aug. 1

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Lamps, spirits of turpentine, burning.	Luther Jones.....	New York city..	Nov. 25
Lantern for steamboats, (additional improvement April 25, 1839)	John M. Read.....	Louisville, Ky.....	Dec. 28
Roasting meat.....	Samuel Pierce.....	New York city.....	July 12
Steaming, boiling, &c., apparatus..	B. F. Gold.....	New York.....	Jan. 9
Stoves.....	Phineas Gillet.....	New Hartford, Conn.	June 30
Stoves.....	James Miller.....	Baltimore, Md.....	Oct. 16
Stoves, close.....	William Beach.....	Philadelphia, Pa.....	Oct. 19
Stove, cooking.....	E. L. Parshley and B. Furbish.	Brunswick, Me.....	Jan. 9
Stove, cooking.....	Horace V. Teall.....	Canajoharie, N. Y....	Jan. 20
Stove, cooking, (additional improvement Feb. 18, 1841.)	Jefferson Cross.....	Eaton, N. Y.....	June 27
Stove, cooking.....	Garet G. Hermance..	Poughkeepsie, N. Y.	July 24
Stove, cooking.....	Simeon Heywood and L. P. Fisher.	Claremont, N. H. ..	Aug. 29
Stove, cooking.....	Jordan L. Mott.....	New York city.....	Sept. 19
Stove, cooking, (disc. March 26, 1846.)	Daniel Tisdale.....	Canton, Mass.....	Nov. 12
Stove, cooking, construction, (antedated August 30, 1838.)	Stephen Wilcox.....	Springfield, Mass....	Sept. 13
Stove, cooking, heat to.....	Stephen J. Gold and Job S. Gold.	New York city.....	June 20
Stove, cooking, and oven.....	John R. Smith.....	New Haven, Conn..	Mar 10
Stove, cooking, railway, (reissued August 27, 1840.)	Isaac B. Bucklin.....	West Troy, N. Y....	July 9
Stoves, cooking, for summer.....	Anson Atwood.....	Troy, N. Y.....	June 30
Stoves, cooking, for summer and winter.	Philo P. Stewart.....	New York city.....	Sept. 12
Stoves, cooking, and warming rooms.	Josiah Hill.....	Andover, Mass.....	Oct. 16
Stoves, dumb, for parlors.....	John G. Treadwell....	Albany, N. Y.....	June 30
Stoves and fireplace.....	Joseph Hur ^l , jr.....	Stoneham, Mass.....	June 23
Stoves and grates, (antedated Feb. 26, 1838.)	Eli C. Robinson.....	Troy, N. Y.....	June 30

CLASS VI.—*Steam and gas engines, including boilers and furnaces therefor, and parts thereof.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838
Boilers, steam.....	Abram Van Order.....	Ithaca, N. Y.....	July 17
Boilers, steam.....	Ellis L. Horton.....	Hartford, Conn.....	Sept. 5
Boilers, steam.....	Jacob Perkins, (assigned to A. M. Perkins.)	Now residing in England.	Dec. 15
Boilers, steam, regulating height of water in.	Seth Graham.....	Roxbury, Mass.....	Feb. 15
Boilers, steam, safety.....	Levin P. Clark.....	Baltimore, Md.....	May 30
Boilers, steam, spiral flue for.....	Benjamin J. Miller...	New York city.....	April 5
Pistons, steam engines for.....	Ellis L. Horton.....	Hartford, Conn.....	Sept. 5
Spark-catcher.....	Timothy Newhall.....	Lynn, Mass.....	Jan. 27
Spark-catcher, (additional improvement June 14, 1838.)	Jonas P. Fairlamb....	Philadelphia, Pa.....	Mar. 3
Spark-catcher.....	William T. James.....	New York city.....	April 13

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Spark-catcher	T. L. Smith and W. J. Van Loane.)	Newark, N. J.	June 20
Spark-catcher	Wm. S. Montgomery.	Baltimore, Md.	July 28
Spark-catcher	Benjamin Briscoe.	Detroit, Mich.	Dec. 15
Spark-catcher	Samuel Leonard	Bridgewater, Mass..	Dec. 15
Spark-catcher	John Finley	Baltimore, Md.	Dec. 23
Spark-catcher flue	Johannes Oberhauser.	Charleston, S. C.	Feb. 24
Steam, condensing apparatus for	Asahel Collins	Ulster, N. Y.	Dec. 31
Steam engine	Seth Graham	Roxbury, Mass.	April 21
Steam engine	Nathaniel Bosworth.	Philadelphia, Pa.	July 9
Steam engine, (reissued July 18, 1840.)	William A. Lighthall.	Albany, N. Y.	April 14
Steam engine, cutting off steam from	Isaac Adams	Boston, Mass.	May 17
Steam engine, draught, box for	Andrew M. Eastwick.	Philadelphia, Pa.	April 5
Steam engine, locomotive	Z. H. Man and Levi B. Thying.	Lowell, Mass.	Mar. 10
Steam engine, rotary	O. Wright and A. A. Wilder.	Warsaw, N. Y.	April 2
Steam, generating	Phineas Bennett	New York	Aug. 3
Steam, generating	Horatio Hubbell	Philadelphia, Pa.	Aug. 6
Valve, safety	John Hadley	Bennington, N. Y. ...	Mar. 10

CLASS VII.—*Navigation and maritime implements, comprising all vessels for conveyance on water, their construction, rigging, and propulsion; diving dresses, life preservers, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Boats, canal	Edward Randolph ...	Salt Creek, Ohio.	Jan. 9
Boats, canal	John H. Long	Lewistown, Pa.	April 5
Boats for travelling on ice	Thaddeus Chapin	Canandaigua, N. Y. ...	Sept. 14
Cables, chain, stopper for	M. P. Mix	New York	Nov. 3
Diving dress	William S. Taylor	do	Jan. 20
Graft of sail vessels	John Brown	Stonington, Conn. ...	Dec. 31
Ice-breaker	Walter Hunt and J. Townsend.	New York	Oct. 3
Life-preserver, safety	John J. White	Philadelphia, Pa.	April 7
Propelling paddles for boats	Isaac McCord	Harrisburg, Pa.	Sept. 22
Propelling vessels	John Ericsson	Kingdom of Sweden.	Feb. 1
Raising vessels and carrying	Hiram L. Meeker and J. Bergen.	Jersey city, N. J., and New York city.	May 25
Raising vessels and floating	Samuel Carson	Woodside, England..	July 12
Raising vessels out of water, (additional improvement Sept. 13, 1839.)	Thomas Bell	Brookhaven, N. Y. ...	Nov. 14
Tree-nails, turning	J. E. Andrews	Boston, Mass.	Aug. 30

II.—*Classified list of expired patents*—Continued.CLASS VIII.—*Mathematical, philosophical, and optical instruments, including clocks, chronometers, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Electro-magnets, changing the poles.	Nelson Walkley	Tuscaloosa, Ala.	June 27
Electro-magnetism as a motor.....	Solomon Stimpson	New York	Sept. 12
Plumb, balance and pendulum.....	Lemuel Lewis.....	Newfield, N. Y.....	Oct. 3
Protracting table.	William T. Steiger....	Washington, D. C..	Sept. 7
Quadrant, artificial horizon for	Charles Goulding	Noble, Ala.....	Feb. 24
Sphereometer for ascertaining relative bearings.	Cephas Johnson.....	Southington, Conn..	Jan. 9
Spring for clocks	Joseph S. Ives.....	New York city	May 4

CLASS IX.—*Civil engineering and architecture, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.*

Improvements or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Blasting rocks, safety fuse for.....	William Lewis	New York city	Oct. 26
Boring rocks	George C. Doherty....	Cumberland co., Ky.	Aug. 29
Bridges, swinging.....	Abner R. Ring.....	Parma, N. Y.....	Nov. 9
Canal lock gate	Franklin Livingston..	Waterford, N. Y....	April 13
Doors, drop	George Kilburn.....	Walpole, N. H.....	Dec. 31
Doors, hanging.....	Edward C. Tilson	Thomaston, Me.....	Jan. 9
Excavating earth, elevating box, wheels for.	James Rowe.	Triana, Ala.....	Feb. 15
Excavating and removing earth....	James Sawyer.....	New York city	Mar. 23
Excavating and embanking ditches.	George Page	Keene, N. H.....	Oct. 26
Excavating, embanking, and ditching.	Linton Thorn	Washington, D. C..	Oct. 10
Excavator, mud-machine... ..	John Hart	Middletown, Conn..	Nov. 20
Gravel pump for excavating wells..	Laura Rice, administratrix of James J. Rice, deceased, and Ebenezer Rice.	Salina, N. Y.....	Aug. 15
Marine railway.....	Robert Findle, administrator of Israel Riggin.	Baltimore, Md.....	Aug. 30
Pile-driving, progressive, for railroads.	Smith Cram.....	New York city	June 14
Railroad, preventing cattle on	David Green	Greenfield, N. Y... ..	Aug. 25
Railroad timber	James Stimpson	Baltimore, Md.....	Aug. 13
Removing obstructions under water.	Smith Cram.....	New York city	Oct. 26
Roofs, covering with tin.....	John B. Duval.....	Charleston, S. C....	Sept. 19
Saws, removing	Henry M. Shreve.....	St. Louis, Mo.....	Sept. 12
Stumps, extracting, and moving heavy bodies.	Roswell H. Hall.....	Branchport, N. Y....	Sept. 15
Window sash, preparing stuff for..	Caleb B. Rogers	Norwich, Conn.....	Sept. 20

II.—*Classified list of expired patents*—Continued.CLASS X.—*Land conveyance, comprising carriages, cars, and other vehicles used on roads, and parts thereof.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Axletrees and boxes, (additional improvement Oct. 25, 1838.)	James A. Smith	New Haven, Conn..	1838. Mar. 23
Axletrees, railroad cars, strengthening of.	Ziba Durkee.	Philadelphia, Pa....	Jan. 9
Brakes, for cars, eccentric.....	Ephraim Morris	Bloomfield, N. Y....	Sept. 19
Bumpers applied to locomotives, &c.	J. P. Fairlamb and L. C. Judson.	Philadelphia, Pa....	Jan. 9
Bumpers and spring draught, for railroad cars.	Peter Alverson.....	New Haven, Conn..	Sept. 8
Car, railroad, (additional improvement Nov. 21, 1842.)	Samuel Harrison, jr..	Philadelphia, Pa....	April 24
Car, railroad	William A. Davis.....	Baltimore, Md.....	Oct. 5
Lock, spring, for coach doors	Peter Alverson.....	New Haven, Conn..	April 2
Sleigh runners to wheel carriages, attaching.	Henry G. Guyon	New York city.....	Sept. 13
Springs, carriage.....	William Patton.....	Towanda, Pa.....	Jan. 9
Springs, carriage.....	William Sharp.....	Burdett, N. Y.....	April 7
Springs, carriage.....	Elbridge G. Woodside.	Augusta, Me.....	May 4
Springs, carriage.....	George B. Robinson...	Pawlet, Vt.....	Oct. 3
Springs, carriage.....	Remember Baker, executor of Stan. Baker.	Elba, N. Y.....	June 19
Springs, carriage, and attaching carriage bodies to them.	David A. Morton.....	Croton, N. Y.....	Jan. 9
Springs, carriage, and attaching carriage bodies to them.	J. Jones, Allen Eells, and Horace Griswold.	Delaware, co., N. Y.	July 16
Springs, carriage, elliptic.....	Melzar Tuells.....	Penn Yan, N. Y....	July 9
Springs for locomotive	Johannes Oberhausser.	Charleston, S. C....	Feb. 15
Springs for railroad cars, (reissued Sept. 25, 1840, and June 8, 1841.)	Fowler M. Ray.....	Catskill, N. Y.....	Nov. 3
Tire for wheels, facing iron with steel.	William Johnson.....	Newark, Del.....	May 30
Velocity, obtaining, on railroads...	Jacob Nollner	Washington, D. C..	April 13
Wheels, car, cast-iron.....	Henry Morey	Beaver Meadow, Pa.	Mar. 10
Wheels, car, cast-iron.....	Jona. Bonney, Charles Bush, and Geo. B. Lobdell.	Wilmington, Del....	Mar. 17
Wheels, car, cast-iron.....	Samuel Truscott, Geo. Wolfe, and James Dougherty.	Columbia, Pa.....	Mar. 17
Wheels, carriage, and harness	George Barnant.....	Washington, D. C..	May 25
Wheels, carriage, for railroad.....	Robert Grant	Baltimore, Md.....	Nov. 3
Wheel-hubs of car, chilling.....	Hopkin Thomas.....	Beaver Meadow, Pa.	Oct. 13
Wheels of locomotive engines.....	Henry R. Dunham....	New York	Feb. 15

II.—*Classified list of expired patents*—Continued.

CLASS XI.—*Hydraulics and pneumatics, including water-wheels, wind-mills, and other implements operated on by air or water, or employed in the raising and delivery of fluids.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Air, action, for propelling boats....	James Black.....	Orangeville, Ohio....	July 24
Bellows, hand	John Grennell	Springfield, Mass....	Aug. 3
Bellows, steam	Martin Bell.....	Antis township, Pa...	April 24
Gate, flume, for water-wheels.....	William Buckminster..	Framingham, Mass....	April 25
Hydrants and fire-plugs.....	John M. Jorden.....	Baltimore, Md.....	Sept. 8
Hydrostatic press.....	Edward Merrill.....	New Bedford, Mass..	Mar. 28
Pistons of pumps, working.....	David Whittier	Belfast, Me.	April 14
Pumps.....	Joseph Smart.....	Enton, Pa.....	Feb. 3
Pumps.....	Jesse Reed	Marshfield, Mass....	July 24
Pumps	Joseph Evans	Lebanon, Ohio.....	Nov. 9
Pump, fire-engine	Joseph Newman.....	Baltimore, Md.....	April 14
Pump, suction and force.....	James J. Rice	Salina, N. Y.....	Mar. 10
Pump, suction and force.....	Andrew Bailey	Jefferson, Ohio.....	May 4
Raising water.....	David L. Myers and Samuel Myers.....	Christianburg, Va...	July 28
Raising water and forcing	Elisha Vance.....	Wilmington, Ohio...	June 7
Syphon for drawing oil.....	James Gray.....	Fredericksburg, Va..	April 25
Water-wheel.....	John W. Moon.....	Roxbury, N. Y.....	Feb. 15
Water-wheel.....	John R. Wheeler	Seneca Falls, N. Y..	April 14
Water-wheel.....	John Mumma	West Alexandria, O.	April 28
Water-wheel.....	Samuel B. Howd.....	Geneva, N. Y.....	July 26
Water-wheel.....	William Hatfield.....	Zanesville, Ohio.....	Dec. 31
Water-wheel.....	Thomas N. Whitcomb and Jos. M. Whitcomb.	Grafton, Vt.....	Dec. 31
Water-wheel, reacting.....	Nelson Johnson.....	Erwin Centre, N. Y..	May 30
Wind-wheel, horizontal.....	Wm. Lewis and Thos. J. Lewis.	Boston and Cambridge, Mass.	Jan. 27
Wind-wheel, regulating.....	Israel Keyes.....	Putney, Vt.....	Sept. 14

CLASS XII.—*Lever, screw, and other mechanical power, as applied to pressing, weighing, raising, and moving weights.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Balance, platform.....	B. Morrison.....	Milton, Pa.....	Mar. 17
Balance, platform.....	J. B. Dale.....	Lansingburg, N. Y..	Aug. 30
Balance, platform.....	R. L. McCollum.....	Rochester, N. Y.....	Dec. 31
Balance, scale, beam, and weights..	Alvah H. Tree.....	Troy, N. Y.....	Jan. 9
Boom derrick, (additional patent September 13, 1839.)	James S. Savage.....	Boston, Mass.....	Feb. 15
Cargoes, ascertaining weight of....	Amory Amsden.....	Rochester, N. Y.....	June 27
Crane, labor-saving.....	Thomas Godwin.....	New York city	Oct. 2
Press, cheese.....	Luke Hale.....	Hollis, N. H.....	June 30
Press, cotton.....	Henry Waterman.....	Bath, Me.....	May 10
Press, cotton.....	Alexander Jones.....	New Orleans, La....	Oct. 26
Press, improved.....	George C. Chesley....	Rocky Mount, Vt...	June 27
Raising heavy bodies, and extract- ing stumps.	Roswell H. Hall.....	Branch Port, N. Y..	Sept. 15

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Raising heavy bodies, machinery for, (additional patent December 31, 1838.)	George Kilburn.....	Walpole, N. H.....	1838. Aug. 25
Windlass.....	Russel Evarts.....	Madison, Conn.....	May 30
Windlass.....	F. G. Cameron.....	New York city.....	June 12
Windlass for weighing anchors ...	John M. O'Brien.....	Brunswick, Me.....	Nov. 9

CLASS XIII.—*Grinding mills and mill-gearing, containing grain mills, mechanical movements, and horse-powers, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bevel gear, universal.....	John Lewis.....	Burlington, Vt.....	1838 Nov. 29
Cider mill, portable.....	Frederick Fredley....	Sugar Valley, Pa....	Aug. 3
Flax seed, grinding.....	George L. Stearns.....	Boston, Mass.....	Aug. 17
Friction rollers, (antedated September 26, 1837.)	Rollin Dickinson and S. G. Mooriman.	Southington, Ct.....	Mar. 26
Gearing for driving machinery.....	Jesse Urmy.....	Wilmington, Del....	Feb. 6
Grist-mill.....	Perry Davis.....	N. Providence, R. I..	May 17
Grist-mill.....	O. P. Stevens, assignee of Ezra Goodell.	Port Lawrence, Ohio.	Oct. 10
Horse-power.....	James Secor.....	New York, N. Y....	Ap'l 28
Horse-power.....	Miles C. Mix.....	Darby, N. Y.....	June 23
Horse-power.....	Orin Straight.....	Lycoming co., Pa....	Aug. 3
Horse-power.....	Jerub A. Fay.....	Baltimore, Md.....	Oct. 10
Horse-power, endless chain.....	Webber Furbish.....	Hallowell, Me.....	Ap'l 14
Mill-stones, dressing and laying the runners of.	Charles Vest.....	Stokes county, N. C.	Oct. 2
Mill-stones, facing, furrowing, and dressing.	Zebulon Cheesebrough.	Alden, N. Y.....	Dec. 10
Mill, sugar, breaking and crumbling lumps of.	William Bent.....	Philadelphia, Pa....	Feb. 3
Motion, reciprocating.....	Charles A. Watson....	Greene river, Ky....	Aug. 1
Spindle and brush, self-tightening..	Henry Flinchbaugh..	Lampeter township, Pa.	Oct. 19

CLASS XIV.—*Lumber, including machines and tools for preparing and manufacturing, such as sawing, planing, mortising, shingle and stave, carpenters' and coopers' implements.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Auger, double-twisted, (reissued July 30, 1845.)	E. L'Hommiedieu, assignee of R. Watrous.	Chester, Ct.....	1838. July 24
Boring and framing timber.....	Jared Badger.....	Brooklyn, Ct.....	Jan. 20
Casks, cutting heading for, (antedated July 27, 1837.)	Lee Wells.....	Hartsville, N. Y.....	Jan. 27
Clapboards, sawing.....	Crawford Tyler.....	Milford, N. H.....	Aug. 30
Coopering, crows for.....	James F. Brodhead....	Kingston, N. Y.....	Oct. 8
Dovetailing and mortising.....	John Brainerd.....	Aurora, Ohio.....	Jan. 9

II.—*Classified list of expired patents—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Gimlet.....	Ezra L'Hommedieu...	Chester, Ct.....	Mar. 10
Mortising and tenoning.....	Henry Barnes	Munson, Ohio.....	April 28
Mortising timber.....	Francis and Thomas Burdick.	Brooklyn, N. Y.....	April 7
Mortising timber.....	Ira McLaughlin.....	Sunderland, Vt.....	April 7
Mortising timber.....	John Andrews	Sudbury, Mass.....	May 30
Mortising timber.....	John Gridley, assignee of Erastus M. Shaw.	Baltimore, Md.....	Sept. 22
Plane, screw-arms for.....	Emanuel W. Carpenter	Lancaster, Pa.....	Feb. 6
Planing boards.....	Robert Luscomb.....	Penn Yan, N. Y.....	June 12
Planing boards.....	Joseph Lombard.....	Boston, Mass.....	Oct. 13
Planing boards.....	Barnabas Langdon	Troy, N. Y.....	Jan. 9
Saw, annular.....	Robert Grant.....	Baltimore, Md.....	Oct. 8
Saw-mills.....	Cornelius Van Alstine..	Manlius Centre, N. Y.	Aug. 18
Saw-mills.....	James Secor.....	New York.....	Ap'l 28
Saw-mill dogs.....	H. Thurber.....	Painted Post, N. Y.	May 30
Saw-mill, portable.....	Pearson Crosby.....	Fredonia, N. Y.....	June 7
Saw-mill, without saw-gate.....	John C. Yates	Columbus, Tenn....	Ap'l 21
Shingles and clapboard, sawing.....	Thomas J. Flanders...	Bradford, N. Y.....	Sept. 25
Shingles, sawing.....	Elnathan Sampson	Plymouth, N. H.....	Sept. 5
Shingles, shaving.....	B. Langdon.....	Troy, N. Y.....	Jan. 9
Shingles, shaving.....	W. Thorn and J. Thorn, jr.	Plainfield, N. J.....	June 7
Staves for barrels, jointing.....	James Wyman.....	Boston, Mass.....	July 28
Staves, sawing.....	William Bell.....	Lexington, Ky.....	Sept. 22
Staves, sawing and jointing.....	Nathaniel Moore.....	Ellsworth, Me.....	June 19
Staves, sawing and jointing.....	William Laney and Solomon Merrick.	Springfield, Mass....	Sept. 25
Tonguing, grooving, &c., boards, side-cutter head.	Walter M. Hutton....	Troy, N. Y.....	Oct. 26
Tonguing, grooving, and heading boards, (antedated August 21, 1837.)	Samuel Shepherd and D. Baldwin.	Nashua, N. H.....	Feb. 21
Tonguing, grooving, and heading boards.	Frederick Fredley.....	Sugar Valley, Pa....	Sept. 15

CLASS XV.—*Stone and clay manufactures, including machines for pottery, glass making, brick making, dressing and preparing stone, cements, and other building materials.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Brick making	Jesse Reeder.....	Cincinnati, Ohio.....	Feb. 15
Brick making	Samuel C. Brusster....	Kensington dist, Pa.	April 14
Brick moulding.....	Loomis E. Ransom.....	Millport, N. Y.....	Jan. 9
Brick moulding.....	John Bolton	Saratoga Springs, N. Y.	Aug. 23
Brick moulding and pressing.....	S. Waterman and C. Learned.	Charleston, S. C....	Ap'l 14
Brick press	Gaylord V. Harper	Batavia, N. Y.....	Ap'l 25
Brick press	Stephen Ustick, assign- ed to C. P. Bronson.	Philadelphia, Pa.....	Dec. 28
Brick press for dry clay.....	N. Sawyer and J. W. Smith.	Washington, D. C...	Aug. 13
Brick press for dry clay.....	Benjamin H. Brown...	Washington, D. C...	Dec. 8

II.—*Classified list of expired patents*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Earthenware	Joseph Smolinski.....	Philadelphia, Pa.....	1838. Mar. 28
Hammer, cutting and dressing stone.	Joseph Richards	Braintree, Mass.....	Feb. 20
Hammer, pecking stone	Bela Gardner.	Ashfield, Mass.....	Aug. 3
Marble, &c., dressing.....	John D. Buzzell.....	Cape Elizabeth, Me..	Aug. 13
Stone, cutting and dressing, (antedated September 3, 1837.)	G. M. Alger and J. A. Alger.	South Strafford, Vt..	Mar. 3
Stone, facing	Daniel Bunnell	Xenia, Ohio.....	July 16

CLASS XVI.—*Leather, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Pating hides and skins.....	William Zollickoffer..	Middleburgh, Md...	1838. Feb. 3
Crimping leather.....	Lucius Upham.....	Putney, Vt.	Jan. 9
Crimping leather.....	Collins H. Jaquith	Keene, N. H.	Mar. 21
Crimping leather, (antedated September 26, 1837.)	Joseph Adams.....	Fairhaven, Vt.....	Mar. 26
Crimping leather.....	Nathaniel Woodbury..	Calais, Me.....	Aug. 16
Crimping leather.....	George and Major Algar	Greenport, N. Y....	Nov. 25
Harness, horse-collars, stretching ..	Henry Barton	West Carlisle, Ohio..	July 9
Leather, manufacturing.....	A. Hickman and E. L. Davenport.	Abington, Va.....	Aug. 1
Pricking leather for harness.....	Joseph Briggs, Luther C. Carner, and John C. Carner.	Paineville, Ohio.	Mar. 26
Rolling and shaving leather.....	Thomas Chase	New York city.. ...	Sept. 12
Skiving and whitening leather.....	Gilbreth & Eaton, assignees of Seth Graham.	Roxbury, Mass.....	May 10
Splitting leather, sole and other....	Elias Putman.	Danvers, Mass.....	Nov. 20
Tanning leather, vats for.....	W. L. J. C. Rouse and Silas Taylor.	Bedford, Va.....	June 20
Tanning, process of.....	Thomas Chase, assigned to G. H. Richards.	New York city.....	Nov. 25
Trunks, travelling, fire and water-proof.	Charles F. Miller.....	Lancaster, Pa.....	June 20
Whips, platting machine for covering.	Seymour Holladay....	Westfield, Mass.....	April 4

II.—*Classified list of expired patents*—Continued.

CLASS XVII.—*Household furniture, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather dressing, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Bedstead.....	Samuel P. Smith.....	Salina, N. Y.....	Oct. 26
Bedstead fastening.....	William Bell.....	Lexington, Ky.....	Feb. 15
Bedstead fastening.....	Pardon Post.....	New Haven, Ct.....	June 12
Bedstead fastening.....	Laurens Kent.....	Dorset, Vt.....	Sept. 12
Bedstead rails, cutting screws on the ends of.....	Jacob Lindly.....	Cynthiana, Ky.....	June 20
Bedstead sacking, stretching.....	William S. Anderson..	Shelbyville, Tenn..	June 4
Bedstead, sofa.....	Nicholas McGraw....	New York city.....	Dec. 10
Bedstead, sofa-sliding.....	George W. Wode....	New York city.....	June 12
Bedstead, wardrobe.....	Zebulon C. Favor.....	Boston, Mass.....	April 2
Broom-making.....	John M. Spooner.....	Belchertown, Mass..	April 28
Chairs, combined rocking and castor	John David Brown....	New York city.....	Oct. 5
Coffee and tea, making.....	Antoni Bencini.....	Milton, N. C.....	Sept. 27
Couch, variety.....	Eleazer Carver.....	Bridgewater, Mass..	June 12
Cutting apples, coring, quartering..	Robert W. Mitchell..	Marin's Hill, Ohio..	April 13
Cutting vegetables.....	John G. Conger.....	Rebersburg, Pa.....	Jan. 27
Cutting vegetables, beet-roots, &c..	Joseph Herd, jr.....	Boston, Mass.....	July 26
Dough, plating and cutting crackers.	John M. Heagle.....	New Haven, Ct.....	April 13
Feathers, cleaning and purifying..	Samuel G. Ladd.....	Hallowell, Maine....	Sept. 22
Feathers, dressing and washing...	John W. Howlett....	Greensborough, N. C.	Oct. 5
Refrigerator.....	Henry V. Hill.....	Washington, D. C...	May 25
Washing clothes, rotary pounder for.	Christopher Aurnock..	Elbridge, N. Y.....	Mar. 10
Washing machine.....	Robert W. Oliphant...	North Granville, N. Y.	June 7
Writing desk.....	Seth Luther.....	Boston, Mass.....	June 19

CLASS XVIII.—*Arts, polite, fine, and ornamental, including music, painting, sculpture, engraving, books, paper, printing, binding, jewelry, &c.*

Inventions or discoveries.	Patentees.	Residence	Date of patent.
			1838.
Book-binding.....	David Felt.....	New York, N. Y....	Aug. 1
Counterfeit notes, preventing.....	Eleazer Watson.....	Albany, N. Y.....	Aug. 3
Gilding copper, brass.....	George Richards.....	Birmingham, Engl'd.	May 17
Organs.....	John Meads.....	Albany, N. Y.....	Nov. 25
Pens, metallic, (antedated September 21, 1837.)	Henry C. Windle, Joseph Gillott, and Stephen Morris.	England.....	Mar. 21
Pencil case and pen.....	Thomas Addison.....	New York city.....	May 10
Piano-forte, (reissued December 31, 1839.)	Edwin Brown.....	Boston, Mass.....	Nov. 20
Piano-forte, key for tuning.....	John Cutts Smith.....	Boston, Mass.....	Nov. 14
Piano-forte, wrest pin of.....	Daniel Walker.....	New York, N. Y.....	June 19
Types, casting printers'.....	David Bruce, jr.....	Bordentown, N. J...	Mar. 17
Types, smoothing the sides of.....	David Bruce, jr.....	Bordentown, N. J...	Mar. 10

II.—*Classified list of expired patents*—Continued.CLASS XIX.—*Fire-arms and implements of war, and parts thereof, including the manufacture of shot and gunpowder.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Carriage, gun.....	William Smith.....	Washington, Ky....	1838. July 19
Fire-arms.....	H. & C. Daniels.....	Chester, Ct.	Feb. 15
Fire-arms, (additional improvement July 9, 1839.)	William Jenks	Columbia, S. C.....	May 25
Fire-arms.....	H. L. Thistle.....	New Orleans, La....	Aug. 1
Fire-arms.....	Samuel Adams.....	Springfield, Mass....	Oct. 3
Fire-arms, many-chambered.....	P. F. Haviland and E. A. Bennet.	Waterville, Me.....	Feb. 15
Fire-arms, many-chambered.....	H. & C. Daniels.....	Chester, Ct.....	April 5
Fire-arms, many-chambered.....	Theodore F. Strong....	Northampton, Mass.	April 21
Fire-arms, many-chambered.....	Rufus Nicholls and Ed- ward Childs.	Conway, Mass.....	April 24
Fire-arms, many-chambered	Mighill Nutting.....	Portland, Me.....	April 25
Fire-arms, many-chambered.....	Elijah Jaquith	Brattleboro', Vt.....	July 12
Lock, gun	Philo W. Hoyt.....	Danbury, Ct.....	Mar. 10
Powder.....	R. J. L. Witty.....	Lowell, Mass.....	April 2
Shot charger	George W. Dobbins....	Baltimore, Md.....	Mar. 23
Shot, manufacturing.....	Alfred Duval.....	Baltimore, Md.....	May 8
Throwing balls, shot, &c.....	Robert McCarty.....	City of New York..	Dec. 31

CLASS XX.—*Surgical and medical instruments, including trusses, dental instruments, bathing apparatus, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Corn eradicator.....	Peregrine Williamson..	New York.....	1838. May 17
Tooth extractor.....	David H. Dickey.....	Boston, Mass.....	Aug. 30
Truss, corset.....	Johannes Oberhausser..	Charleston, S. C.....	Jan. 20
Truss for hernia.....	Samuel A. Brown.....	Petersburg, Va.....	May 25

II.—*Classified list of expired patents*—Continued.CLASS XXI.—*Wearing apparel, articles for the toilet, &c., including instruments for manufacturing.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Combs, metallic.....	Richard A. Ives.....	Bristol, Ct.....	Mar. 28
Combs, metallic.....	Richard A. Ives.....	Bristol, Ct.....	Sept. 25
Garments, measuring and cutting..	William Kahler and Charles Kahler.	Bloomsburg, Pa.	Jan. 20
Shears, flying.....	Seth Parsons.....	Hoosick Falls, N. Y.	June 7
Springs for belts, pantaloen straps, and vests, (reissued to O. M. McDaniel, assignee of Hunt, November 16, 1839.)	Walter Hunt.....	New York, N. Y....	Mar. 21
Stock for the neck, metallic frame for.	John Johnson.....	New York.....	Dec. 31

CLASS XXII.—*Miscellaneous.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
			1838.
Fish, catching.....	Arunah Tiffany.....	Gibson, Pa.	July 26
Hurdle for rearing silk-worms.	Gamaliel Gay.....	Poughkeepsie, Ct....	Oct. 6
Ice, packing and stowing.....	Fred. Sudor.....	Boston, Mass.....	May 4
Net for catching-mackerel.....	Benjamin W. Hale....	Newbury, Mass....	June 4
Seine, fishing.....	Russel Evarts.....	Madison, Ct.....	Mar. 21
Seine, fishing.....	Cyrus Tracy.	Savannah, Ga.....	Sept. 19
Traps for rats.....	Thomas Kell.....	Alexandria, D. C....	Mar. 3

Classified list of patents for Designs that have expired during the year 1852.

Designs.	Patentees.	Residence.	Date of patent.
Stoves.....	Addison Low, assignor to John S. Leake and Francis S. Low.	Albany, N. Y.....	Feb. 13, 1845
Lamps.....	P. F. Slane.....	East Cambridge, Mass.....	Mar. 26, 1845
Stoves.....	Charles S. Hine.....	New York.....	May 1, 1845
Tripod stand for globes, &c.....	Gilman Joslin.....	Boston, Mass.....	May 7, 1845
Stoves.....	Sansom H. Ransom.....	Albany, N. Y.....	July 10, 1845
Stoves.....	Ezra Ripley, assignor to Ira Jagger, William B. Treadwell, and John S. Perry.	Troy, N. Y.....	April 1, 1845
Stoves.....	Anson Atwood, assignor to Benjamin Starbuck.....	Troy, N. Y.....	July 14, 1845
Stoves.....	David Root.....	Cincinnati, Ohio.....	Sept. 9, 1845
Stoves.....	Elijah P. Penniman.....	Rochester, N. Y.....	Sept. 9, 1845
Umbrella stands.....	William L. Miller.....	New York.....	Sept. 13, 1845
Stoves.....	Addison Low, assignor to Rathbone & Co.....	Albany, N. Y.....	Oct. 7, 1845
Bust of J. C. Calhoun.....	Clark Mills.....	Charleston, S. C.....	Oct. 7, 1845
Stove.....	John S. Peckham and M. Feckham.....	Utica, N. Y.....	Sept. 6, 1845
Stove.....	Henry Stanley.....	Poultney, Vermont.....	Oct. 16, 1845
Stoves.....	Ezra Ripley, assignor to E. Johnson, G. Geer, and D. B. Cox.	Troy, N. Y.....	Aug. 14, 1845
Stove-plate.....	Calvin Fulton, assignor to John M. French.....	Rochester, N. Y.....	Nov. 7, 1845
Stoves.....	Ezra Ripley, assignor to Peter Low, John P. Choller, and Eber Jones.	Troy, N. Y.....	Nov. 12, 1845
Parlor grate.....	William and Nathan H. Jackson.....	New York.....	Jan. 7, 1845
Stoves.....	Albert G. Bristol.....	Rochester, N. Y.....	Sept. 22, 1845

III.

ALPHABETICAL LIST OF PERSONS WHOSE PATENTS HAVE EXPIRED
DURING THE YEAR 1852, WITH THEIR INVENTIONS OR DISCOVERIES,
AND CLASS.

Patentees.	Inventions or discoveries.	Class.
Adams, Isaac.....	Steam engine, cutting off steam.....	VI.
Adams, Joseph.....	Crimping leather.....	XVI.
Adams, Samuel.....	Fire-arms.....	XIX.
Addison, Thomas.....	Pencil-case and pen.....	XVIII.
Algar, George & Major.....	Crimping leather.....	XVI.
Alger, Charles C.....	Furnace, blast, smelting.....	II.
Alger, Cyrus.....	Plough, cast-iron, malleable.....	I.
Alger, G. M. & J. A.....	Stone, cutting and dressing.....	XV.
Allen, John.....	Fuel, composition for.....	V.
Alverson, Peter.....	Bumpers, railroad cars.....	X.
Alverson, Peter.....	Lock, spring, coach doors.....	X.
Amsden, Amory.....	Cargoes, ascertaining weight.....	XII.
Anderson, William S.....	Bedstead sacking, stretching.....	XVII.
Andrews, John.....	Mortising timber.....	XIV.
Andrews, Joseph E.....	Tree-nails, turning.....	VII.
Angell, Emory A.....	Loom-templates.....	III.
Arnoux, Antoine.....	Gas burner.....	V.
Atwater, James.....	Grates, open.....	V.
Atwood, Anson.....	Stove, cooking, summer.....	V.
Aumock, Christopher.....	Washing clothes, rotary pounder.....	XVII.
Bacon, Jonathan.....	Window, spring fastener.....	II.
Badger, Jared.....	Boring and framing timber.....	XIV.
Bailey, Andrew.....	Pump.....	XI.
Baker, Remem, exec'r of Stan. Baker	Springs, carriage.....	X.
Baker, William P.....	Gin, cotton.....	III.
Ball, Daniel.....	Lock, door.....	II.
Barker, John.....	Saw for ice.....	II.
Barnant, George.....	Wheels, carriage, and harness.....	X.
Barnes, Henry.....	Mortising and tenoning.....	XIV.
Barton, Henry.....	Horse collar, stretching.....	XVI.
Baughman, J., Guiteau & High.....	Furnace, smelting ore.....	II.
Beach, Robert A. B.....	Straw cutter.....	I.
Beach, William.....	Stoves, close.....	V.
Beale, Joshua T.....	Lamps.....	V.
Beebe, Uriah.....	Thrashing machine, conveying straw.....	I.
Beehan, Thomas.....	Brewing beer.....	IV.
Bell, Martin.....	Bellows, steam.....	XI.
Bell, Thomas.....	Raising vessels.....	VII.
Bell, William.....	Staves, sawing.....	XIV.
Bell, William.....	Bedstead fastening.....	XVII.
Bencini, Antoni.....	Coffee and tea making.....	XVII.
Bennett, Phineas.....	Steam generating.....	VI.
Bent, William.....	Mill, sugar.....	XIII.
Bigelow, B. Erastus.....	Loom, knotted counterpanes.....	III.
Bissey, Amos.....	Forge, smiths'.....	II.
Black, James.....	Air propelling boats.....	XI.
Blake, Philos, Eli. W., & John A.....	Castors for bedsteads.....	II.
Bolton, John.....	Brick moulding.....	XV.
Bonney, J., C. Bush, & G. B. Lobdell..	Wheels, car, cast-iron.....	X.
Boon, Sanford.....	Spoons, plating mill.....	II.
Bosworth, Nathaniel.....	Steam engine.....	VI.
Boynton, John.....	Straw cutting.....	I.
Brainard, John.....	Dovetailing and mortising.....	XIV.
Briggs, J. B., L. C. Carner, & J. C. Carner.	Pricking leather for harness.....	XVI.
Briscoe, Benjamin.....	Spark-catcher.....	VI.
Brittain & Silvers.....	Flax or hemp gathering.....	I.
Brodhead, James F.....	Coopering, crows for.....	XIV.
Brown, Benjamin H.....	Brick press, dry clay.....	XV.

III.—*Alphabetical list of expired patents*—Continued.

Patentees.	Inventions or discoveries.	Class.
Brown, Edwin	Piano-forte.....	XVIII.
Brown, James S.....	Boring groove for flier of speeders.....	II.
Brown, John.....	Gaft of sail vessels, (extended for seven years from December 31, 1852.)	VII.
Brown, John David	Chairs, rocking and castor.....	XVII.
Brown, Samuel A.....	Truss, hernia.....	XX.
Bruce, David, jr.....	Types, casting, printers'.....	XV:II.
Bruce, David, jr.....	Types, smoothing sides.....	XVIII.
Brusster, Samuel C.....	Brick making.....	XV.
Bryant, Isaac C.....	Furnace, iron.....	II.
Buckminster, William.....	Gate for water-wheels.....	XI.
Buckminster, William.....	Seeding, all kinds.....	I.
Bucklin, Isaac B.....	Stove, cooking, railway.....	V.
Buckminster, William.....	Rake, hay.....	I.
Bunce, Elisha.....	Seeding, corn planter.....	I.
Bunnell, Daniel.....	Stone, facing.....	XV.
Burdick, Francis & Thomas.....	Mortising timber.....	XIV.
Burnham, Hiram.....	Oakum picking.....	III.
Burt, Enoch.....	Rags, dusting.....	III.
Buzell, John D.....	Marble dressing.....	XV.
Cameron, F. G.....	Windlass.....	XII.
Carman, Aaron.....	Plough, clevis.....	I.
Carpenter, Emanuel W.....	Plane, screw, arms.....	XIV.
Carroll, Michael.....	Kiln, charring coal.....	V.
Carson, Samuel.....	Raising vessels.....	VII.
Carter, Robert.....	Rags, washing.....	III.
Carver, Eleazer.....	Hulling rice and barley.....	I.
Carver, Eleazer.....	Rolling mill for circular saws.....	II.
Carver, Eleazer.....	Gin, cotton, saw ribs.....	III.
Carver, Eleazer.....	Couch, variety.....	XVII.
Carver, Eleazer.....	Gin, cotton, roller.....	III.
Chapin, Thaddeus.....	Boats on ice.....	VII.
Chase, Thomas.....	Rolling and shaving leather.....	XVI.
Chase, T., (assigned to G. H. Richards.)	Tanning process.....	XVI.
Cheesebrough, Zebulon.....	Mill-stones, dressing.....	XIII.
Chesley, Geo. C.....	Press, improved.....	XII.
Clapp, J. & E. S.....	Cutting scythe, hanging.....	I.
Clark, Levin P.....	Boilers, safety.....	VI.
Clark & Albertson.....	Rags, dusting and tearing.....	III.
Clegg, Samuel.....	Gas meters, self-acting.....	IV.
Cole, David H.....	Winnowing grain.....	I.
Collins, Asahel.....	Furnace, blast, draught.....	II.
Collins, Asahel.....	Steam, condensing.....	VI.
Conger, John G.....	Cutting vegetables.....	XVII.
Cords, James J.....	Hulling rice, mortar.....	I.
Cram, Smith.....	Pile, for railroads, driving.....	IX.
Cram, Smith.....	Removing obstructions under water.....	IX.
Crane, George.....	Iron, manufacturing.....	II.
Crosby, Pearson.....	Saw mill, portable.....	XIV.
Cross, Jeduthan.....	Hulling grain and cleaning.....	I.
Cross, Jefferson.....	Stove, cooking.....	V.
Cumberland, William.....	Lead, white.....	IV.
Currier, Reuben W.....	Thrashing and winnowing.....	I.
Dale, J. B.....	Balance, platform.....	XII.
Daniels, H. & C.....	Fire-arms.....	XIX.
Daniels, H. & C.....	Fire-arms, many-chambered.....	XIX.
Daniels, Reuben.....	Shearing woollen cloth.....	III.
Dare, Rencore.....	Nails and spike, heading.....	II.
Davis, Perry.....	Grist mill.....	XIII.
Davis, William A.....	Car, railroad.....	X.
Davis, William B.....	Thrashing clover seed.....	I.

III.—*Alphabetical list of expired patents—Continued.*

Patentees.	Inventions or discoveries.	Class.
Day, Moses.....	Cordage, rope, twisting strand.....	III.
Deats, John.....	Plough.....	I.
Demasters, Foster.....	Flax and hemp, &c., hatchelling.....	III.
Dennis, Jonathan, jr.....	Trees from canker worm.....	I.
Dennis, Jonathan, jr.....	Silk, reeling.....	III.
Dennis, Jonathan, jr.....	Spinning and twisting silk.....	III.
Denison, Lester E.....	Corn shelling.....	I.
Dewey, Ebenezer.....	Straw cutting.....	I.
Dickey, David H.....	Tooth extractor.....	XX.
Dickinson & Merriman.....	Friction rollers.....	XIII.
Ditmars, A. D.....	Hay, preserving.....	I.
Dobbin, George W.....	Shot charger.....	XIX.
Doherty, George C.....	Boring rocks.....	IX.
Douglass, Stephen P. W.....	Churn.....	I.
Drummond & Fuller.....	Furnace, smelting lead.....	II.
Dunham, Henry R.....	Wheels of locomotives.....	X.
Durkee, Ziba.....	Axles, rail cars, strengthening.....	X.
Dutcher, Josiah.....	Grates in stoves, raising and lowering.....	V.
Duval, Alfred.....	Shot, manufacturing.....	XIX.
Duval, John B.....	Roofs, covering with tin.....	IX.
Duval, A. & W. J.....	Hulling rice and rubbing wheat.....	I.
Duval, William J.....	Straw cutter.....	I.
Duval, Z., A. Calligan, & J. Miller.....	Smut and garlic machine.....	I.
Eastman, Jonathan S.....	Straw cutter.....	I.
Eastwick, Andrew M.....	Steam engine, draught box for.....	VI.
Eaton, Ebenezer.....	Furnaces of stoves.....	V.
Ely, Theodore.....	Wool, cleaning from burs.....	III.
Ericsson, John.....	Propelling vessels.....	VII.
Evans, Joseph.....	Pumps.....	XI.
Evans & Churchill.....	Spinning fliers, flax and hemp.....	III.
Evarts, Russel.....	Seine fishing.....	XXII.
Evarts, Russel.....	Windlass.....	XII.
Faber, George.....	Cards, wool.....	III.
Fairlamb, Jonas P.....	Spark-catcher.....	VI.
Fairlamb & Judson.....	Bumpers, applied to locomotives.....	X.
Fairman, Elijah.....	Loom, power.....	III.
Favor, Zebulon C.....	Bedstead, &c.....	XVII.
Fay, Jerub A.....	Horse-power.....	XIII.
Feinour, Joseph, & Joseph Feinour, jr.....	Lamps, signal.....	V.
Felt, David.....	Book-binding.....	XVIII.
Finlay, John.....	Spark-catcher.....	VI.
Flanders, Thomas J.....	Shingles and clapboards, sawing.....	XIV.
Fletcher, John C.....	Lamps, &c.....	V.
Flinchbaugh, Henry.....	Spindle and bush, self-tightening.....	XIII.
Flook, Jacob, of John.....	Hulling cloverseed.....	I.
Forsyth, Andrew.....	Flax and hemp, breaking.....	III.
Fossard, Felix.....	Dyeing wool.....	IV.
Foster, Leonard.....	Locks, mortise.....	II.
Fredley, Frederick.....	Cider mill, portable.....	XIII.
Fredley, Frederick.....	Tonguing, grooving, &c., boards.....	XIV.
Gardiner, Bela.....	Hammer, pecking stone, &c.....	XV.
Gay, Gamaliel.....	Hurdle for rearing silk-worms.....	XXII.
Gilbert, Myron J.....	Thrashing grain and shelling corn.....	I.
Gilbreth & Eaton, assignees of S. Graham.....	Skiving, &c., leather.....	XVI.
Gillett, Edwin.....	Straw-cutting.....	I.
Gillet, Phineas.....	Stoves.....	V.
Gilson, Samuel.....	Straw-cutting.....	I.
Godwin, Thomas.....	Crane, labor-saving.....	XII.
Gold, B. F.....	Steaming, boiling, &c., apparatus.....	V.
Gold, S. J. & J. S.....	Cooking stove, heat to.....	V.
Goodyear, Charles.....	Gum-elastic, manufacturing.....	IV.

III.—*Alphabetical list of expired patents*—Continued.

Patentees.	Inventions or discoveries.	Class.
Goulding, Charles	Quadrant, artificial horizon for	VIII.
Graham, Seth	Steam engine	VI.
Graham, Seth	Boilers, steam, regulating height of water in.	VI.
Grant, Robert	Wheels, carriage, for railroads	X.
Grant, Robert	Saw, annular	XIV.
Gray, James	Syphon, for drawing oil	XI.
Green, David	Railroad, preventing cattle on	IX.
Gregory, Stephen	Plough, mould board, double	I.
Grennell, John	Bellows, hand	XI.
Gridley, Cyrus	Furnace, and pots for melting	II.
Gridley, J., assignee of E. M. Shaw	Mortising timber	XIV.
Grieb, F. & H.	Thrashing machine	I.
Guyon, Henry G.	Sleigh runners to wheel carriages, attaching	X.
Hadley, John	Valve, safety	VI.
Hagerty, John	Fireplace, parlor and kitchen	V.
Hale, Benjamin W.	Net for catching mackerel	XXII.
Hale, Luke	Press, cheese	XII.
Hall, Roswell H.	Stumps, extracting, and moving heavy bodies	IX.
Hall, Roswell H.	Stumps, extracting, and raising heavy bodies	XII.
Harper, Gaylord V.	Brick press	XV.
Harris, James S.	Filing handsaws	II.
Harrison, Samuel, jr.	Car, railroad, &c.	X.
Harrison, Samuel T.	Evaporator	IV.
Hart, John	Excavator	IX.
Hatfield, William	Water-wheel	XI.
Haviland & Bennet	Fire-arms, many-chambered	XIX.
Hayes, Augustus A.	Tannin, extracting	IV.
Heagle, John M.	Dough, plating and cutting crackers	XVII.
Herd, Joseph, jr.	Cutting vegetables	XVII.
Hernance, Garet G.	Cooking stove	V.
Hernly, John	Cultivator, corn plough	I.
Heywood & Fisher	Cooking stove	V.
Hibbard, Harmon	Hats and furs, coloring	III.
Hickman & Davenport	Leather, manufacturing	XVI.
Hight, George	Hoe, fastening handles to	I.
Hill, Daniel F.	Lime, &c., spreading	I.
Hill, H. V.	Refrigerator	XVII.
Hill, Josiah	Cooking stove, and warming rooms	V.
Hoard, Francis	Sugar boiler, circulating	IV.
Hoarth & Jones	Spinning fliers and spindles, cotton	III.
Holladay, Seymour	Whips, platting machine for covering	XVI.
Holland, Harrison	Spinning silk, &c.	III.
Holland, Homer	Paper, preparing husks to make	III.
Holland, Homer	Lead, white	IV.
Hollingsworth, John M.	Paper engine, regulator	III.
Horton, Eli	Loom, power, treadle in	III.
Horton, Ellis L.	Pistons, steam engines for	VI.
Horton, Ellis L.	Boilers, steam	VI.
Howd, Samuel B.	Water-wheel	IX.
Howlett, John W.	Feathers, dressing, &c.	XVII.
Hoyt, George A.	Seeding, sowing, drill for	I.
Hoyt, Philo W.	Lock, gun	XIX.
Hoyt & Bulkley	Hinges, &c.	II.
Hubbell, Horatio	Steam, generating	VI.
Humphreys, John	Carpeting and rugs	III.
Hunsicker, Daniel	Hulling clover seed	I.
Hunt, Walter	Springs for belts	XXI.
Hunt & Townsend	Ice-breaker	VII.
Hurd, Joseph, jr.	Sugar, manufacturing, from beets	IV.
Hurd, Joseph, jr.	Stoves and fireplace	V.
Hutton, Walter M.	Tonguing, grooving, &c.	XIV.
Idler, Jacob	Cotton, separating trash from	III.

III.—*Alphabetical list of expired patents*—Continued.

Patentees.	Inventions or discoveries.	Class.
Ives, Joseph S.	Springs for clocks	VIII.
Ives, Richard A.	Combs, metallic.	XXI.
Ives, Richard A.	Combs, metallic.	XXI.
James, William T.	Spark-catcher.	VI.
Jaquith, Elijah.	Fire-arms, many-chambered	XIX.
Jaquith, Collins H.	Crimping leather	XVI.
Jenks, William.	Fire-arms	XIX.
Johnson, Cephas.	Sphereometer	VIII.
Johnson, George A.	Winnowing grain	I.
Johnson, John.	Stock for neck, metallic frame for	XX.
Johnson, Walter R.	Steel, converting iron partially into	II.
Johnson, Walter R.	Steel, increasing strength of	II.
Johnson, William.	Tire for wheels	X.
Johnson, Nelson.	Water-wheel, reacting	XI.
Jones, Alexander.	Press, cotton	XII.
Jones, Luther.	Lamps, spirits turpentine, burning	V.
Jones, J., Allan Eells, & Horace Griswold.	Springs, carriage, and attaching carriage bodies to them.	X.
Jones, Joseph.	Air, heating, for hot blast in furnaces	V.
Jones, Henry C.	Locks, trunk, &c.	II.
Jorden, John M.	Hydrants and fire-plugs	XI.
Joyce, Thomas.	Fuel, preparing, and stoves for same	V.
Kahler & Kahler.	Garments, measuring and cutting	XXI.
Keene & Keene.	Screws, cutting wood	II.
Kell, Thomas.	Traps for rats	XXII.
Kent, Lawrence.	Extracting color from dye-woods	IV.
Kent, Laurens.	Bedstead fastenings	XVII.
Kern, Samuel.	Thrashing machine, clover, &c.	I.
Keyes, Alvin.	Flax and hemp machine	III.
Keyes, Israel.	Wind-wheel, regulating	XI.
Kilburn, George.	Machinery for raising heavy bodies	XII.
Kilburn, George.	Doors, drop	IX.
Kimball, Stephen.	Loom, power, friction to yarn beam	III.
Klein, George W.	Bark, evaporating extract of.	IV.
Ladd, Samuel G.	Feathers, cleaning and purifying	XVII.
Lancy, Wm.. & Solyman Merrick.	Staves, sawing	XIV.
Langdon, Barnabas.	Planing boards, (extended for seven years from January 9, 1852.)	XIV.
Langdon, Barnabas.	Shingles, shaving, (extended for seven years from January 9, 1852.)	XIV.
Lapham, Benjamin.	Loom, power and common	III.
Laurence, William.	Lamps, coach	V.
Leonard, Samuel.	Spark-catcher	VI.
Lewis, David, jr.	Cutting grass and grain	I.
Lewis, John.	Bevel gear	XIII.
Lewis, Lemuel.	Plumb, balance and pendulum	VIII.
Lewis & Lewis.	Wind-wheel, horizontal	XI.
Lewis, William.	Blasting rocks, fuse for.	IX.
L'Hommedieu, Ezra.	Gimlet	XIV.
L'Hommedieu & Watrous.	Auger, double twisted	XIV.
Lighthall, William.	Steam engine	VI.
Lindley, Jacob.	Bedstead rails, cutting screws on ends	XVII.
Livingston, Franklin.	Canals, locks, gate	IX.
Lombard, Joseph.	Planing boards	XIV.
Long, John H.	Boats, canal	VII.
Luscomb, Robert.	Planing boards, &c.	XIV.
Luther, Seth.	Writing-desk	XVII.
Macey, Charles & R.	Hinges, butt, &c.	II.
Magennis, Patrick.	Dyeing, art of.	IV.
Mallory, James.	Kettles, sugar, setting	V.
Mann & Thying.	Steam engine, locomotive	VI.
Marshall & Coburn.	Cultivator, &c.	I.

III.—*Alphabetical list of expired patents*—Continued.

Patentees.	Inventions or discoveries.	Class.
Mason, William.....	Spinning, speeder, &c.....	III
Meads, John.....	Organs.....	XVIII.
Meeker & Bergen.....	Raising vessels, &c.....	VII.
Merchant, Hiram R.....	Seeding, sowing, &c.....	I.
Merrick, Solyman.....	Punch, revolving spring.....	II.
Merrill, Edward.....	Hydrostatic press.....	XI.
Miller, Benjamin J.....	Boilers, steam, spiral flues for.....	VI.
Miller, Charles F.....	Trunks, fire and water-proof.....	XVI.
Miller, James.....	Stoves.....	V.
Mitchell, Robert W.....	Cutting apples, &c.....	XVII.
Mix, M. P.....	Cables, chain, stopper for.....	VII.
Mix, Miles C.....	Horse-power.....	XIII.
Montgomery, William S.....	Spark-catcher.....	VI.
Moon, John W.....	Water-wheel.....	XI.
Moor, Nathaniel.....	Staves, sawing and jointing.....	XIV.
Morey, Henry.....	Wheels, car, cast-iron.....	X.
Morris, Ephraim.....	Brakes for cars.....	X.
Morrison, Benjamin.....	Balance, platform.....	XII.
Morse, Leonard, assignee of Harvey Pettee.	Sockets, iron, making.....	II.
Morton, David A.....	Springs, carriage, &c.....	X.
Mott, Jordon L.....	Furnaces, portable.....	V.
Mott, Jordon L.....	Stove, cooking.....	V.
Mamma, John.....	Water-wheel.....	XI.
Myers, D. L. & S.....	Raising water.....	X.
McCarty, Robert.....	Throwing balls, shot, &c.....	XIX.
McClory, James.....	Lock, door.....	II.
McCollum, R. L.....	Balance, platform.....	XII.
McCord, Isaac.....	Propelling paddles.....	VII.
McGraw, Nicholas.....	Bedstead, sofa.....	XVII.
McLaughlin, Ira.....	Mortising timber.....	XIV.
Newell, Robert.....	Locks, &c.....	II.
Newhall, Timothy.....	Spark-catcher.....	VI.
Newman, Joseph.....	Pump, fire-engine.....	XI.
Nichols & Childs.....	Fire-arms, many-chambered.....	XIX.
Nock, Joseph.....	Locks, trunk.....	II.
Nollner, Jacob.....	Velocity on railroads, &c.....	X.
Nutting, Mighill.....	Fire-arms, many-chambered.....	XIX.
Oberhausser, Johannes.....	Spark-catcher flue.....	VI.
Oberhausser, Johannes.....	Springs for locomotives.....	VI.
Oberhausser, Johannes.....	Truss, corset.....	XX.
O'Brien, John M.....	Windlass for weighing anchors.....	XII.
Oliphant, Robert W.....	Washing machine.....	XVII.
Ormiston, John.....	Plough, self-sharpening.....	I.
Osgood, Daniel, jr.....	Churn.....	I.
Page, George.....	Drill stock, geared.....	II.
Page, George.....	Excavating, &c., ditches.....	IX.
Parker, Amos.....	Horse-power.....	XIII.
Parker, John.....	Smut machine.....	I.
Parshley & Furbish.....	Cooking stove.....	V.
Parsons, Seth.....	Shears, flying.....	II.
Parsons, Seth.....	Shearing cloth.....	III.
Patton, William.....	Springs, carriages.....	X.
Pender & Horn.....	Loom, power.....	III.
Perkins, Angier March.....	Heating buildings, &c.....	V.
Perkins, Angier M., assignee of Jacob Perkins.	Boilers, steam.....	VI.
Pierce, Dexter.....	Awls, attaching to hafts.....	II.
Pierce, Samuel.....	Roasting meat.....	V.
Pierce, Samuel.....	Flues, &c., of kitchen ranges.....	V.
Pike, Joshua G.....	Churn.....	I.
Poe, George.....	Furnace, blast.....	II.

III.—*Alphabetical list of expired patents*—Continued.

Patentees.	Inventions or discoveries.	Class.
Pope, Lemuel T.....	Punching, &c., iron.....	II.
Porter, Rufus.....	Churn.....	I.
Porter, Rufus.....	Corn shelling.....	I.
Post, John W.....	Plough.....	I.
Post, Pardon.....	Bedstead fastenings.....	XVII.
Poullalier, Cyprien.....	Cement, bituminous.....	IV.
Pratt, John M.....	Napper, metallic.....	III.
Prouty & Mears.....	Plough.....	I.
Puffer, Samuel.....	Cutting, scythe snath.....	I.
Putnam, Elias.....	Splitting leather, &c.....	XVI.
Randolph, Edward.....	Boats, canal.....	VII.
Ransom, Loomis E.....	Brick moulding.....	XV.
Ray, Fowler M.....	Springs, railroad cars.....	X.
Reed, John M.....	Lantern for steamboats.....	V.
Reed, Jesse.....	Pumps.....	XI.
Reeder, Jesse.....	Brick making.....	XV.
Reynolds, Charles G.....	Salt manufacturing.....	IV.
Rice, James J.....	Pumps, suction and force.....	XI.
Rice, Laura, administratrix of J. J. Rice & E. Rice.	Gravel pump for excavating wells.....	IX.
Rich, Martin.....	Plough, hill side, double.....	I.
Richards, George.....	Gilding copper, brass, &c.....	XVIII.
Richards, Joseph.....	Iron ore, smelting.....	II.
Richards, Joseph.....	Hammer for cutting, &c.....	XV.
Richardson, Sylvanus.....	Starch machine.....	IV.
Ring, Abner R.....	Bridges, swinging.....	IX.
Robinson, Eli C.....	Stoves and grates.....	V.
Robinson, George B.....	Springs, carriage.....	X.
Rogers, Caleb B.....	Window sash, &c.....	IX.
Rogers, George.....	Vegetable wash for the lungs.....	IV.
Root, Elisha K.....	Axes, hatchets, &c.....	II.
Ropes, George.....	Knives and forks, table.....	II.
Ross, Joseph.....	Thrashing machine, preventing dust.....	I.
Rouse & Taylor.....	Tanning leather, &c.....	XVI.
Rowe, James.....	Excavating earth, elevating, &c.....	IX.
Rowe, William.....	Thrashing cloverseed.....	I.
Rust, Samuel.....	Lamps, &c.....	V.
Rust, Samuel.....	Lamps, &c.....	V.
Rust, Samuel.....	Lamps, patent.....	V.
Rust, Samuel.....	Lamps, shade to.....	V.
Samson, Elnathan.....	Shingles, sawing.....	XIV.
Sanderson, Isaac.....	Paper, brown, from, &c.....	III.
Sanford, Nathaniel C.....	Currycomb-making.....	II.
Savage, James S.....	Boom derrick.....	XII.
Savary, Richard.....	Nails and spikes, wrought.....	II.
Sawyer, James.....	Excavating earth, and removing.....	IX.
Sawyer & Smith.....	Brick press, for dry clay.....	XV.
Seagrave, John D.....	Loom sattenette.....	III.
Searle, John.....	Bee-hive, and houses.....	I.
Secor, James.....	Saw-mill.....	XIV.
Secor, James.....	Horse-power.....	XIII.
Sellick, Thaddeus.....	Saw, circular, &c.....	II.
Seydle & Ward.....	Pipes, leaden, &c.....	II.
Sharp, James.....	Furnace, refining iron.....	II.
Sharp, William.....	Springs, carriage.....	X.
Shepherd, S., & D. Baldwin.....	Tonguing, &c., boards.....	XIV.
Shreve, Henry M.....	Snags, removing, &c.....	IX.
Sibley, Alden.....	Calico, &c., printing.....	III.
Snart, Joseph.....	Pumps.....	XI.
Smith, John Cutts.....	Piano-forte, key for tuning.....	XVIII.
Smith, Daniel.....	Rake, hay.....	I.
Smith, James.....	Spinning mule, self-acting.....	III.

III.—*Alphabetical list of expired patents*—Continued.

Patentees.	Inventions or discoveries.	Class.
Smith, James A.....	Axletrees and boxes.....	X.
Smith, John R.	Cooking stove and oven.....	V.
Smith, Samuel P.....	Bedsteads.....	XVII.
Smith & Van Loane.....	Spark-catcher.....	VI.
Smith, William.....	Carriage, gun.....	XIX.
Smolinski, Joseph.....	Earthenware.....	XV.
Sorrel, M.....	Copper, alloying, &c.....	II.
Southworth, Daniel H.....	Smut machine, &c.....	I.
Spencer, William.....	Dyeing yarn from the beam.....	IV.
Spooner, John M.....	Broom making.....	XVII.
Sprouse, William T.....	Plough.....	I.
Stearns, George L.....	Flaxseed, grinding.....	XIII.
Steiger, William T.....	Protracting table.....	VIII.
Stevens, Oliver P., assignee of Ezra Goodell.....	Grist mill.....	XIII.
Stewart, Philo P.....	Cooking stove, summer and winter.....	V.
Stimpson, James.....	Railroad, timber.....	IX.
Stimpson, Solomon.....	Electro-magnetism.....	VIII.
Straight, Orrin.....	Horse-power.....	XIII.
Strong, Theodore F.....	Fire-arms, many-chambered.....	XIX.
Sudor, Fred.....	Ice, packing and stowing.....	XXII.
Swan, Lansing B.....	Mineral water, soda fountain.....	IV.
Taylor, Henry.....	Plough.....	I.
Taylor, William S.....	Diving dress.....	VII.]
Teall, Horace V.....	Cooking stove.....	V.
Teeter, Isaac.....	Plough, hill-side.....	I.
Thistle, Hezekiah L.....	Fire-arms.....	XIX.
Thomas, Enoch.....	Churn.....	I.
Thomas, Hopkin.....	Wheel hubs of car, chilling.....	X.
Thorn, Linton.....	Excavating, embanking, and ditching.....	IX.
Thorn, Wm., & James Thorn, jr.....	Shingles, shaving.....	XIV.
Thorpe & Angell.....	Loom, weavers', harness for.....	III.
Thurber, H.....	Saw mill, dogs.....	XIV.
Tiffany, Arunah.....	Fish, catching.....	XXII.
Tilson, Edward C.....	Doors, hanging, &c.....	IX.
Tindle, Robert, administrator of Israel Riffin.....	Marine railway.....	IX.
Tisdale, Daniel.....	Cooking stove.....	V.
Tracy, Cyrus.....	Seine fishing.....	XXII.
Tree, Alvah H.....	Balance, scale-beam, and weights.....	XII.
Treadwell, John G.....	Stoves, dumb, for parlors.....	V.
Trufant, William B.....	Salt rheum, remedy for.....	IV.
Truscott, S., G. Wolfe, & J. Dougherty.....	Wheels, car, cast-iron.....	X.
Tuells, Melzar.....	Springs, carriage, elliptic.....	X.
Tyler, Crawford.....	Clapboards, &c., sawing.....	XIV.
Upham, Lucius.....	Crimping leather.....	XVI.
Urmey, Jesse.....	Gearing for driving machinery.....	XIII.
Ustick, Stephen, assigned to Cotesworth P. Bronson.....	Brick-press.....	XV.
Van Alstine, Cornelius.....	Saw-mills.....	XIV.
Vance, Elisha.....	Raising water, and forcing.....	XI.
Van Order, Abram.....	Boilers, steam.....	VI.
Vest, Charles.....	Mill-stones, dressing, &c.....	XIII.
Walker, Daniel.....	Piano-forte, wrest pin of.....	XVIII.
Walkly, Nelson.....	Electro-magnets, changing the poles, &c.....	VIII.
Waste, E., N. Wellington, & D. Hutchins.....	Saw set.....	II.
Waterhouse, Horatio W.....	Thrashing grain, hulling, &c.....	I.
Waterman, Henry.....	Press, cotton.....	XII.
Waterman & Learned.....	Brick moulding, &c.....	XV.
Watson, Charles A.....	Motion, reciprocating, &c.....	XIII.
Watson, Eleazer.....	Counterfeit notes, preventing.....	XVIII.
Webb, James W.....	Corn shelling.....	I.

III.—*Alphabetical list of expired patents—Continued.*

Patentees.	Inventions or discoveries.	Class.
Wells, Lee	Casks, cutting head for	XIV.
West, Amoni	Thrashing grain	I.
Wheeler, Hiram F.	Spinning machine, domestic	III.
Wheeler, Ira	Cutting grass, &c.	I.
Wheeler, John R.	Water-wheel	XI.
Whitcomb, T. N. & J. M.	Water-wheel	XI.
White, John J.	Life preserver, safety	VII.
Whitehouse, Turner	Lock, door	II.
Whitson, Thomas	Flues of open fireplaces	V.
Whittier, David	Piston for pumps, working	XI.
Wilcox, Philip	Cooking stove, construction	V.
Wilder, Luke	Forges, backs	II.
Williams, Elijah	Leaching ashes	IV.
Williamson, Peregrine	Corn eradicator	XX.
Wilson, Robert	Lock, door, &c.	II.
Wilson, William	Door springs	II.
Windle, H. C., J. Gillot, & S. Morris.	Pen, metallic	XVIII.
Witty, R. I. L.	Powder	XIX.
Wode, George W.	Bedstead, sofa, sliding	XVII.
Woodbury, Nathaniel	Crimping leather	XVI.
Woodcroft, Bennet	Calico, &c., printing	III.
Woodside, Ellbridge G.	Springs, carriage	X.
Woone, Godfrey	Calico, &c., printing	III.
Wright, Joseph, assignee of D. C. Stone.	Axes, manufacturing	II.
Wright, Lemuel W.	Bleaching cotton, &c.	III.
Wright, Thomas	Corn shelling	I.
Wright & Wilder	Steam engine, rotary	VI.
Wyman, James	Staves for barrels, jointing	XIV.
Yale, L., S. W. Stimson, & N. Stimson.	Thrashing grain	I.
Yates, John C.	Saw mill, without saw gate	XIV.
Yerkes, Richard E.	Spinning fliers and spindles, &c.	III.
Zollickoffer, William	Bating hides	XVI.

Alphabetical list of patents for designs that have expired during the year 1852.

Patentees.	Designs.
Atwood, Anson, assignor to Benjamin Starbuck	Stoves.
Bristol, Albert G.	Stoves.
Fulton, Calvin, assignor to John M. French	Stove plate.
Hine, Charles S.	Stoves.
Jackson, William & Nathan H.	Parlor grate.
Joslin, Gilman	Stand for globes, &c., tripod.
Low, Addison, assignor to John S. Leake & Francis S. Low ..	Stoves.
Low, Addison, assignor to Rathbone & Co.	
Miller, William L.	Umbrella stands.
Mills, Clark	Bust of J. C. Calhoun.
Penniman, Elijah P.	Stoves.
Ransom, Sansom H.	Stoves.
Ripley, Ezra, assignor to Ira Jagger, William B. Treadwell, and John S. Perry.	Stoves.
Ripley, Ezra, assignor to E. Johnson, G. Geer, & W. B. Cox. .	Stoves.
Ripley, Ezra, assignor to Peter Low, John P. Chollar, & Eber Jones.	Stoves.
Root, David	Stoves.
Slane, P. F.	Lamps.
Stanley, Henry	Stove.

IV.

CLASSIFIED LIST OF PATENTS GRANTED DURING THE YEAR 1852, WITH THE NAMES OF PATENTEES, PLACES OF RESIDENCE, AND DATE OF PATENTS.

CLASS I.—Agriculture, including instruments and operations.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bee hives.....	Lorenzo L. Langstroth.....	Philadelphia, Pa.....	Oct. 5, 1852.
Bee hives, moth traps to.....	E. W. Phelps.....	Newark, Licking co., Ohio.....	April 6, 1852.
Cheeses, modes of covering.....	Upson Bushnell.....	Gustavus, Trumbull co., Ohio.....	Jan. 6, 1852.
Chickens, apparatus for feeding.....	Simoon W. Albee.....	Walpole, Cheshire co., N. H.....	Sept. 7, 1852.
Churn and butter worker.....	Orsamus R. Tyler.....	Brattleborough, Windham co., Vt.....	July 27, 1852.
Churn.....	Lucian A. Brown and Hubbard Bigelow, assignors to Henry K. W. Welch, Meacham.....	Hartford, Conn.....	Oct. 5, 1852.
Churning machines.....	Gelston Sanford, assignor to George A. Meacham.....	Ellenville, N. Y., Enfield, Conn.....	May 4, 1852.
Churns.....	Edwin B. Clement.....	Barnet, Caledonia co., Vt.....	Jan. 20, 1852.
Churns.....	Clarkson Rhodes.....	Morrow, Ohio.....	May 18, 1852.
Churns.....	Norman B. Livingston.....	Portland, Indiana.....	July 6, 1852.
Churns.....	John McLaughlin.....	Goshen, Ohio.....	July 13, 1852.
Churns.....	Rufus Maxwell.....	Weston, Lewis co., Va.....	Aug. 24, 1852.
Churns, swinging.....	Wm. F. & N. Davis.....	Castleton, Rutland, Vt.....	Nov. 23, 1852.
Corn shellers.....	William Lindsley.....	Township of Waddam, Stephenson co., Ill.....	Mar. 9, 1852.
Corn shellers.....	William Reading.....	Washington, D. C.....	July 13, 1852.
Cultivators.....	Thaddeus J. Ball and John Post.....	Pittsfield, Mich.....	April 6, 1852.
Cultivators, rotary.....	Pesant E. Royce.....	New Albany, Floyd co., Ind.....	Feb. 17, 1852.
Cultivators, wheel.....	Frederick P. Root.....	Sweden, New York.....	June 8, 1852.
Fans, buckwheat.....	Alfred Platt.....	Waterbury, Conn.....	Jan. 13, 1852.
Flax pullers.....	Lewis S. Chichester.....	Brooklyn, N. Y.....	Nov. 16, 1852.
Grain separators.....	John Thompson.....	Chili, Monroe co., N. Y.....	April 6, 1852.
Grain separators.....	Cyrus Roberts.....	Belville, St. Clair co., Ill.....	July 20, 1852.
Grain separators.....	Jacob Bergey.....	Wadsworth, Medina co., Ohio.....	Oct. 5, 1852.
Grain separators.....	Peter Geiser.....	Smithburg, Washington, co., Md.....	Oct. 19, 1852.
Grass burner.....	John A. Craig.....	Columbia, Chicot co., Ark.....	Feb. 3, 1852.
Harvesters.....	George H. Rugg.....	South Ottawa, Ill.....	June 8, 1852.
Harvesters.....	William McLeigan.....	Cuyerville, N. Y.....	June 15, 1852.
Harvesters.....	William & Thomas Schnebly.....	New York, N. Y.....	June 15, 1852.

Harvesters.....	John H. Manny	Waddam's Grove, Stephenson, co., Ill.	Nov. 23, 1852; ante- dated Sept. 17, 1852.
Harvesters, clover	Mahlon Garretson	Bermudian, Adams co., Pa.	Jan. 6, 1852.
Harvesters, clover	John Krauser	Reading, Pa.	June 22, 1852.
Harvesters, grain	Thomas Van Fossen	Lancaster, Fairfield co., Ohio.	Jan. 20, 1852.
Harvesters, grain	Byron Densmore	Brockport, N. Y.	Feb. 10, 1852.
Harvesters, grain	Daniel Fitzgerald	New York, N. Y.	Sept. 7, 1852.
Harvesters, grain and grass	R. T. Osgood	Orland, Hancock, co., Maine	Feb. 17, 1852.
Harvesters, grain and grass	Daniel Fitzgerald and John H. Smith ..	New York, N. Y.	Aug. 10, 1852.
Harvesters, grain and grass	C. B. Brown	Griggsville, Pike co., Ill.	Dec. 7, 1852.
Harvesters, grain and grass	William H. Seymour, assignor to Sey- mour & Morgan	Brockport, N. Y.	Dec. 14, 1852; ante- dated Oct. 25, 1852.
Harvesters, grain, rakes to	Jearum Atkins	Chelsea, Will co., Ill.	Dec. 21, 1852.
Harvesters, grain	W. F. Keichum	Buffalo, N. Y.	Feb. 10, 1852.
Harvesters, grass	Jesse S. & David Lake	Smith's Landing, Atlantic co., N. J.	July 20, 1852.
Harvesters, grass	Ehakim B. Forbush	Buffalo, N. Y.	July 20, 1852.
Harvesters, grass	William Manning	South Trenton, Mercer co., N. J.	July 20, 1852.
Harvesters, maize	Jacob L. Ream	Mount Pulaski, Ill.	Dec. 21, 1852.
Harvesters, reels for	W. W. & C. C. Wright	Canton, Bradford co., Pa.	Dec. 7, 1852.
Hoes	William C. Finney	Fayette co., Tenn.	Nov. 30, 1852.
Hulling buckwheat	Wilson Ager	Rohersburg, Columbia co., Pa.	June 29, 1852.
Hullers, rice	Peter McKinlay	Charleston, S. C.	Mar. 30, 1852.
Hullers, rice	Clarke Jacobs	Brooklyn, N. Y.	July 20, 1852.
Line and manure, spreading	Lewis Cooper	Coopersville, Lancaster co., Pa.	Oct. 19, 1852.
Ox yokes	Ezra Hough	St. Johnsville, Montgomery co., N. Y.	Aug. 3, 1852.
Planters, cotton seed	William A. Gates	Mount Comfort, Fayette co., Tenn.	Nov. 16, 1852.
Planters, seed	Edward Wicks	Bart township, Lancaster co., Pa.	Feb. 10, 1852.
Planters, seed	Ira Reynolds	Republic, Seneca co., Ohio.	Mar. 9, 1852.
Planters, seed	Jesse Army	Wilmington, Del.	April 6, 1852.
Planters, seed	B. T. Stowell & A. Marcellus ..	Waddam grove, Stephenson co., Ill.	April 13, 1852.
Planters, seed	Francis Van Doren	Adrian, Geneva co., Mich.	April 13, 1852.
Planters, seed	James P. Ross	Lewisburg, Pa.	June 8, 1852.
Planters, seed	Benj. D. Sanders	Holiday's cove, Va.	June 8, 1852.
Planters, seed	Joshua Woodward	Haverhill, N. H.	July 13, 1852.
Planters, seed	Adam Kraber	York county, Pa.	July 27, 1852.
Planters, seed	D. Haldeman	Morgantown, Monongalia co., Va.	Oct. 5, 1852.
Planters, seed	Robert M. Jackson	Penningtonville, Chester co., Pa.	Oct. 5, 1852.
Planters, seed	James Robb	Lewistown, Pa.	Oct. 12, 1852.
Planters, seed	Edson Hart	New Albany, Floyd co., Ind.	Oct. 19, 1852.
Planters, seed	Henry Vermilion	Rising Sun, Cecil co., Md.	Nov. 2, 1852.
Planters, seed	Charles Randall	Palmyra, Lee co., Ga.	Nov. 2, 1852.

IV.—*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Planters, seed.....	Francis Townsend.....	Cambrin, Niagara co., N. Y.....	Nov. 2, 1852.
Planters, seed.....	Constant S. Trevitt.....	Ellicottsville, Cattaraugus co., N. Y.....	Nov. 2, 1852.
Planters, seed.....	William Bullock.....	Philadelphia, Pa.....	Nov. 2, 1852.
Planters, seed.....	Lewis H. Davis and Samuel and Mor- ton Pennock.....	Kennett Square, Chester co., Pa.....	Nov. 16, 1852.
Planters, seed.....	Lewis W. Colver.....	Louisville, Ky.....	Dec. 7, 1852.
Planters, seed.....	Moses D. Wells.....	Morgantown, Monongalia co., Va.....	Dec. 14, 1852.
Planters, seed.....	Henry Nycum.....	Uniontown, Fayette co., Pa.....	Dec. 14, 1852.
Planters, seed, hand.....	Gelston Sanford.....	Ellenville, N. Y.....	June 15, 1852.
Plough.....	Harvey Sprague.....	Riga, Monroe co., N. Y.....	Dec. 14, 1852.
Plough, fastening devices.....	William A. Gates.....	Mount Comfort, Fayette co., Tenn.....	Dec. 21, 1852.
Plough regulators.....	N. Blatchly.....	Windsor, N. Y.....	July 20, 1852.
Ploughs.....	David Swartz.....	Thomasbrook, Va.....	June 22, 1852.
Ploughs.....	J. N. McAtee, assignee of E. Ball.....	Greentown, Ohio, and Canton, Ohio.....	Mar. 23, 1852.
Ploughs.....	Joshua Woodward.....	Haverhill, Grafton co., N. H.....	Mar. 9, 1852.
Ploughs.....	James Robb.....	Lewistown, Pa.....	Oct. 12, 1852.
Ploughs, constructing.....	Albert Gardner, administrator of Wm. L. Hunter, and Albert Gardner.....	Cincinnati, Ohio.....	Oct. 26, 1852.
Ploughs, gung.....	Charles Bishop.....	Norwalk, Huron co., Ohio.....	Oct. 12, 1852.
Ploughs, gung.....	Harvey Kilham and George Valleau.....	Scottsville, Monroe co., N. Y.....	Mar. 30, 1852.
Ploughs, shovel.....	James Latimer.....	Chattanooga, Chattooga co., Ga.....	Mar. 16, 1852.
Ploughs, shovel.....	James H. Forman.....	Sharon, Chambers co., Ala.....	Feb. 10, 1852.
Ploughs, shovel.....	W. F. Piggett.....	Whitepost, Clarke co., Va.....	Mar. 30, 1852.
Ploughs, construction of.....	Fortunatus E. Richardson.....	Hicksford, Va.....	Nov. 30, 1852.
Potato diggers.....	Jesse N. Seeley.....	Forsyth, Ga.....	Dec. 21, 1852.
Potato diggers and stone gatherers.....	John T. Foster.....	New York, N. Y.....	June 29, 1852.
Potato washers. (See Class XVII.).....			
Rakes.....	Anza B. Lewis.....	Brooklyn, Green co., Wis.....	Sept. 21, 1852.
Rakes, bay.....	J. S. Sturgis.....	Litchfield, Medina co., Ohio.....	Mar. 9, 1852.
Rakes, bay.....	Charles R. Soule.....	Purfield, Franklin co., Vt.....	May 18, 1852.
Rakes, bay.....	Zenna Sanders.....	West Windsor, Vt.....	June 8, 1852.
Rollers, field, for cutting stalks and weeds.....	Joseph H. Gost.....	Batavia, Clermont co., Ohio.....	Dec. 14, 1852.
Scythe fastenings.....	Alpheus Kimball.....	Fitchburg, Worcester co., Mass.....	Aug. 3, 1852.
Scythe snaths.....	Charles N., Charles, and Abram Clow.....	Port Byron, N. Y.....	Dec. 14, 1852.

CLASS II.—*Metallurgy and manufacture of metals, and instruments therefor.*

Shovels, construction of.....	Hiram Kimball.....	Worcester, Mass.....	Jan. 6, 1852.
Straw-cutters, feeding rollers in.....	Nathaniel Nuckolls.....	Columbus, Muskego co., Ga.....	Jan. 6, 1852.
Straw-cutters.....	Absalom B. Earle.....	Oneonta, Osego co., N. Y.....	Feb. 24, 1852.
Straw-cutters.....	Joel Dawson.....	Barnesville, Belmont co., Ohio.....	Dec. 14, 1852.
Straw-cutters.....	Warren Gale.....	Louisville, Ky.....	Dec. 21, 1852.
Thresher, grain, feeding apparatus for.....	William R. Palmer.....	Elizabeth city, N. C.....	Feb. 17, 1852.
Threshers, grain, and cleaners.....	J. Jones and A. Lyle.....	Rochester, N. Y.....	Dec. 21, 1852.
Threshing machines.....	Joseph G. Gilbert.....	New York, N. Y.....	July 13, 1852.
Threshing machines, endless belts to.....	John R. Moffit.....	Piqua, Ohio.....	Nov. 30, 1852.
Winnowers.....	Thomas J. Doyle.....	Winchester, Va.....	April 20, 1852.
Winnowers and weighers, grain.....	Thomas T. Strode.....	Coatesville, Chester co., Pa.....	Feb. 24, 1852.
Winnowing machines.....	Samuel Canby.....	Ellicott's Mills, Md.....	Dec. 28, 1852.
Winnowing machines, shakers of.....	Henry Fillbrun.....	Dayton, Montgomery co., Ohio.....	Jan. 13, 1852.
Yoke, neck, of horses.....	Calvin L. Rawdon.....	Bristol, Trumbull co., Ohio.....	Aug. 17, 1852.
Yokes, ox. (See Ox yokes.)			

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Anvil.....	Charles Peters & William Fetter.....	Trenton, N. J.; Bucks co., Pa.....	May 4, 1852.
Attaching pieces of metal to each other by casting, apparatus for.....	Horatio B. Osgood.....	Thompsonville, Hartford co., Conn.....	Jan. 13, 1852.
Axes, process for making.....	John Orelup, assignor to J. Blood, A. J. Goffe, & R. Thomas. Robert Knight.....	Ballston Spa, New York.....	June 8, 1852.
Bevelling the edges of skeeps or metallic strips, &c., machinery for.....	Erasmus Smith, assignor to David Maydole.....	Cleveland, Ohio.....	Sept. 21, 1852.
Bits to braces, fastener of.....	Robert White.....	Norwich, Chenango co., N. Y.....	Aug. 17, 1852.
Blind, cast and wrought metal.....	James R. Creighton.....	Washington, D. C.....	Jan. 20, 1852.
Blind, operator and fastener.....	Frederick H. Moore.....	Cincinnati, Ohio.....	Aug. 31, 1852.
Blind rods, machine for wiring.....	Samuel Barker.....	Ihaca, N. Y.....	June 15, 1852.
Blind and shutter fastener.....	Robert V. Jones.....	New York, N. Y.....	May 11, 1852.
Blind and shutter operator.....	James R. Creighton.....	Buchanan P. O., Alleghany co., Pa.....	Nov. 16, 1852.
Bolts, &c., machinery for heading.....	Edward Payne.....	Cincinnati, Ohio.....	Jan. 13, 1852.
Carpet-bag frames, &c., machinery for bending..	Edward L. Gaylord.....	Albany, N. Y.....	Dec. 28, 1852.
		Newark, N. J.....	Dec. 7, 1852.

IV.—Classified list of patents issued—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Castors, ball, manufacture of.....	Robert Hinton.....	Roxbury, Mass.....	Dec. 14, 1852.
Chains, machinery for making.....	John M. Crawford.....	New Castle, Pa.....	Feb. 17, 1852.
Chain, jack, machinery, arrangement of.....	Hickford Marshall & Seth S. Cook, assignors to John Postwick, jr., & Elbert White.	Stamford, Fairfield co., Conn.....	Mar. 16, 1852.
Circle plates, roses, &c., with dovetailed grooves, devices for casting.	Nathan Matthews, assignor to Richard Edwards, David A. Morris, & Na- than Matthews.	Pittsburg, Pa.....	April 20, 1852.
Coupling, hose. (See Class XL.)	M. T. Cooper.....	Ballston Spa, Saratoga co., N. Y.....	April 6, 1852.
Doors, apparatus for closing.....	Benjamin Nott, assignor to J. P. Pepper.	Bedlehem, N. Y.; Albany, N. Y.....	Mar. 9, 1852.
Door knobs, manufacture of.....	Henry Hochstrasser & A. Musson.....	Philadelphia, Pa.....	Feb. 3, 1852.
Door spring.....	Dexter H. Chamberlain.....	Roston, Mass.....	Oct. 26, 1852.
Drill or bit stock.....	Reuben Daniels.....	Woodsstock, Windsor co., Vt.....	Sept. 21, 1852.
Drilling, hand, machine.....	Charles W. Coe.....	Ashtabula, Ohio.....	Dec. 7, 1852.
Drilling machines.....	William T. Richards.....	New Haven, Conn.....	Sept. 14, 1852.
Ferrules, wire, machinery employed in the man- ufacture of coiled.	William T. Richards.....	New Haven, Conn.....	Nov. 2, 1852.
Ferrules, wire, manufacture of.....	James H. Thompson.....	Paterson, N. J.....	Jan. 27, 1852.
File-cutting machines.....	John Gust Blair.....	Pittsburg, Pa.....	April 27, 1852.
File-cutting machinery.....	John W. Conklin, H. L. Sidman, & L. Whittier.	Ramapo, Rockland co., N. Y.....	Aug. 17, 1852.
Forging machines.....	G. H. Richards, assignor to C. G. Plimpton.	Walpole, Norfolk co., Mass.....	Sept. 14, 1852.
Forging metals, &c., machinery for.....	William Field.....	Providence, R. I.....	Dec. 14, antedated June 14, 1852.
Gold-beater, mechanical.....	Robert B. Ruggles & Lemuel W. Ser- rell, assignors to Robert B. Ruggles.	New York, N. Y.....	Jan. 6, 1852.
Gold-beating machinery.....	William Vine.....	Hartford, Conn.....	May 11, 1852.
Gold, &c., by amalgamation, method of obtaining.	Mayberry A. Bertolet, L. Kirk, & An- drew M. De Hart.	Reading, Pa.....	Dec. 28, 1852.
Gold mineral, reducing.....	William Longmaid.....	Beaumont Square, Middlesex co., Eng.	Aug. 10, 1852.
Gold, washing and amalgamating, &c., machine for.	Alexander Barclay.....	Newark, N. J.....	June 22, 1852.

Gold, processes for dissolving	Charles F. Spieker	New York, N. Y.	Feb. 10, 1852; ante- dated Aug. 10, 1851.
Grinding conical-edged knives, machinery for	James L. Plimpton	Westfield, Mass.	May 4, 1852.
Grinding or polishing saw-blades, &c., machinery for.	William Southwell	Kensington, Philadelphia co., Pa.	May 4, 1852.
Harpoon.	J. D. B. Stillman	New York, N. Y.	April 6, 1852.
Hinge for moulders' flasks	George Grant	Troy, N. Y.	Dec. 7, 1852.
Hinges.	William Baker	Utica, N. Y.	April 13, 1852.
Horse shoe, elastic.	John O. Jones	Newton, Middlesex co., Mass.	Aug. 3, 1852.
Horse shoe machinery.	Solomon Shetter	Alleghany city, Penn.	Nov. 9, 1852.
Hubs, &c., patterns for metal.	Jasper Johnson	Geneseo, N. Y.	July 6, 1852.
Iron, coating, with copper	Theodore G. Bucklin	Troy, N. Y.	Sept. 21, 1852.
Iron fence, ornamental connexion of the parts of an Iron fence, mode of fastening the palings to the ralls in.	Henry Jenkins	Cincinnati, Ohio	Jan. 13, 1852.
Iron fences.	George Hess	Easton, Northampton co., Pa.	Nov. 23, 1852.
Iron railings.	John B. Wickersham	New York, N. Y.	Mar. 9, 1852.
Joint tube, application of a free, in circumstances where it is exposed to external pressure.	Benjamin Kraft	Reading, Pa.	Jan. 27, 1852.
Knobs to doors, &c., method of attaching roses for.	Richard Prosser, assignor to Thomas Prosser.	Birmingham, Eng.; New York, N. Y. ..	Sept. 21, 1852; ante- dated May 31, 1852.
Lead pipe machinery.	Nathan Matthews, assignor to Richard Edwards, David A. Morris, and Na- than Matthews.	Pittsburg, Pa.	April 6, 1852.
Lock.	Benjamin Tatham	New York, N. Y.	May 11, 1852.
Lock.	Albert Betteley	Boston, Mass.	April 6, 1852.
Lock.	Francis Garachon	New York, N. Y.	June 29, 1852.
Lock.	Richard Ketchum	Seneca Castle, Ontario co., N. Y.	Dec. 7, 1852.
Locks.	F. C. Goffin	New York, N. Y.	Oct. 26, 1852.
Locks, alarm.	Charles Frieschel	New York, N. Y.	June 15, 1852.
Locks, door	Marcus R. Stephenson, assignor to Ed- win Holman.	Boston, Mass.	July 13, 1852.
Locks, door	Wm. Moore, assignor to Jas. Carman ..	Williamsburg, Kings co., N. Y.; New York, N. Y.	Sept. 14, 1852.
Lock, pad	Rudolphus Kinsley	Springfield, Mass.	Dec. 7, 1852.
Lock, safety.	Linus Yale, jr.	Newport, Herkimer co., N. Y.	Dec. 21, 1852.
Locks, trunk, plates of.	Conrad Liebrick	Philadelphia, Pa.	Mar. 2, 1852.
Locks, tumblers of.	Henry Blakely	New York, N. Y.	May 25, 1852.
Metal bars, machinery for crimping.	G. Slocum & M. T. Sayles	Lansingburg, Rensselaer co., N. Y.	Nov. 9, 1852.
Metal disks, machine for turning up the edges of sheet.	J. F. Flanders, assignor to F. Roys & E. Wilcox.	Newburyport, Mass.; Berlin, Conn.	Jan. 6, 1852.
Moulding in flasks, apparatus for.	Edward Sattenlee	Albany, N. Y.	Jan. 13, 1852.
Moulding hollow ware.	James J. Johnston	Cincinnati, Ohio	June 29, 1852.

IV.—*Classified list of patents issued*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Milling machines.....	William H. Robertson.....	Hartford, Conn.....	Oct. 5, 1852.
Nail machines.....	Samuel G. Reynolds.....	Worcester, Mass.....	Jan. 20, 1852.
Nail plate feeder.....	Caleb Isbister.....	Alleghany city, Pa.....	Jan. 27, 1852.
Nail, wrought, machinery.....	Daniel Dodge.....	Keeseville, N. Y.....	June 22, 1853.
Ore stampers.....	Thomas Reaney.....	Philadelphia, Pa.....	June 15, 1852.
Ore, machine for stamping.....	Virgil Woodcock.....	Swansey, N. H.....	June 15, 1852.
Pail hales, &c., machinery for bending.....	Robert Banker.....	Rochester, N. Y.....	Dec. 7, 1852.
Planing metals, &c., mode of mounting the cutters of machines for.....	Pierre Saulnier, assignor to J. T. Bruen.....	New York, N. Y.....	Dec. 28, 1852.
Plates, burglar-proof, for doors, safe walls, vaults, &c.....	Linus Yale, jr.....	Newport, Herkimer co., N. Y.....	Oct. 19, 1852.
Process for restoring shape and tempering articles of hardened steel.....	John Silvester.....	West Bromwick, Stafford co., England..	Aug. 31, 1852; in England July 17, 1850.
Puddling iron, &c., apparatus for.....	James McCarty.....	Reading, Berks co., Pa.....	Oct. 5, 1852.
Punch, drop.....	Solomon Andrews.....	Perth Amboy, N. J.....	April 13, 1852.
Punching sheets of metal, machinery for.....	S. T. Sanford.....	Fall River, Bristol co., Mass.....	Jan. 13, 1852.
Quartz, mill for crushing. (See Class XIII.)	Wm. Alford & John D. Spear.....	Southwark, Philadelphia, Pa.....	May 18, 1852.
Safes, iron.....	Wm. P. Blake.....	New York, N. Y.....	Dec. 14, 1852.
Safes, &c., iron, lining for.....	R. S. Cramer & C. C. Blossom.....	Sommersville, Butler co., Ohio.....	Dec. 7, 1852.
Saw gummers.....	J. D. Oustol.....	Springfield, Clark co., Ohio.....	Nov. 2, 1852.
Saw gummers.....	H. O. Elmer.....	Mexico, Oswego co., N. Y.....	Sept. 28, 1852.
Saw gummer, jointed bed-plate.....	Charles C. Felton.....	Delham, Norfolk co., Mass.....	April 20, 1852.
Saw set. (See Class XIV.)	James D. Smith.....	New Britain, Conn.....	Oct. 19, 1852.
Saw sets. (See Class XIV.)	J. B. S. Hadaway.....	East Weymouth, Norfolk co., Mass..	Nov. 16, 1852.
Sash stopper and fastener.....	Cullen Whipple, assignor to New England Screw Co.....	Providence, R. I.....	Dec. 14, 1852; antedated Oct. 16, 1852.
Sash stopper and fastener.....	Mitchell C. Gardner.....	Brockport, Monroe co., N. Y.....	Aug. 3, 1852.
Sash stopper and fastener.....	Thomas J. Sloan.....	New York, N. Y.....	Aug. 24, 1852.
Screw blanks, mechanism for pointing and threading in the same machine.....	Cullen Whipple, assignor to New England Screw Co.....	Providence, R. I.....	July 6, 1852; antedated May 13, 1852.
Screw-cutting stocks, and adjusting the chasers in.....			
Screw blanks, &c., wood, mechanism for gripping.....			
Screw-threading machinery.....			

Screw driver.....	Jacob W. Switzer.....	Basil, Fairfield co., Ohio.....	Dec. 7, 1852.
Screw blanks, rivets, etc., machinery for shaving the heads of.....	John Crum.....	Ramapo, Rockland, N. Y.	Mar. 30, 1852.
Screw blanks, rivets, etc., method of heading.....	William E. Ward.....	Port Chester, Westchester co., N. Y.	Dec. 28, 1852.
Screws, capping of.....	Charles T. Grilley.....	New Haven, Conn.....	April 20, 1852.
Screws, &c., combination of cutters for threading wood.....	Thomas J. Sloan.....	New York, N. Y.....	July 6, 1852.
Screws, machinery for threading wood.....	Cullen Whipple.....	Providence, R. I.....	Aug. 10, 1852.
Screws, threading pointed wood.....	Thomas J. Sloan.....	New York, N. Y.....	Aug. 24, 1852.
Screwing bolts, &c., machinery for.....	John Caswell, assignor to Archibald C. Powell.....	Syracuse, N. Y.....	Nov. 30, 1852.
Screws, wood.....	Cullen Whipple, assignor to New England Screw Co.....	Providence, R. I.....	Dec. 7, 1852; antedated June 7, 1852.
Seaming, double, machines.....	Walter Hamilton.....	Elmira, Chemung co., N. Y.....	Oct. 12, 1852.
Sheet-iron, while in process of manufacture, method of heating.....	Henry McCarty.....	Pittsburg, Pa.....	June 29, 1852.
Soldering in a vacuum, apparatus for.....	Joseph B. & John R. Horne.....	Xenia, Ohio.....	May 11, 1852.
Spike machinery, reciprocating die.....	Moody Belknap, assignor to Moody Belknap & Lyman Kinsley.....	Canton, Norfolk co., Mass.....	Nov. 9, 1852.
Spike machines.....	Philip P. Trayer.....	Baltimore, Md.....	Dec. 14, 1852.
Spoons, forks, &c., machinery for making.....	Alfred Krupp, assignor to Thos. Prosser.....	Essen, Prussia; New York, N. Y.....	June 8, 1852; in England Aug. 26, 1846.
Stereotype plates, casting. (See Class XVIII.)			
Thimbles for rigging, &c., machines for making. (See Class VII.)			
Trip-hammers, vertical.....	Peter Stebbins & John Holmes.....	Schenectady, N. Y.....	June 1, 1852.
Trip-hammers.....	James C. Forest & Geo. Baker.....	Schenectady, N. Y.....	Dec. 14, 1852.
Tubes, machine for making sheet metal.....	Jehiel T. Farrand.....	Port Byron, N. Y.....	June 15, 1852.
Tubes, sheet metal, machinery for forming.....	Orson W. Stow.....	Southington, Hartford co., Conn.....	Sept. 28, 1852.
Tuyeres, water pipes of.....	Peter Sweeney.....	Buffalo, N. Y.....	July 20, 1852.
Type casting. (See Class XVIII.)			
Vault and safe doors, &c., method of securing.....	F. C. Goffin.....	New York, N. Y.....	Nov. 2, 1852.
Vice, taper, attachment for converting the ordinary into a.....	Jeremy W. Bliss.....	Hartford, Conn.....	Nov. 30, 1852.
Vice.....	William Butler.....	Little Falls, Herkimer co., N. Y.....	Oct. 5, 1852.
Vices, jaw, turning.....	Abijah Hulbert.....	Augusta, Ga.....	Nov. 9, 1852.
Welding steel, &c., to cast iron, method of.....	Mark Fisher & John H. Norris.....	Trenton, N. J.....	April 13, 1852.
Wrench, adjustable.....	Andrew Hotchkiss.....	Sharon, Conn.....	May 4, 1852.

IV.—*Classified list of patents issued—Continued.*CLASS III.—*Manufacture of fibrous and textile substances, including machines for preparing fibres of wood, cotton, silk, fur, paper, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Card-teeth, bracing and supporting	Cornelius Speer	New York, N. Y.	Nov. 16, 1852.
Carding by which variegated slivers are produced.	Jonas Holmes and Ephraim French.	Lee, Mass.	May 18, 1852.
Carnets	Thomas Crossley.	Roxbury, Mass.	Mar. 16, 1852.
Cloth on the cloth beam, method of measuring	Wm. H. Woodworth.	Salmon Falls, Stafford co., N. H.	Dec. 21, 1852.
Cordage machinery.	H. T. Jennings, C. S. Collier, and T. P. How, assignors to H. T. Jennings, C. S. Collier, Amenzio Beardsley, and Allen Hemmingway.	Bethany, N. Y.; Buffalo, N. Y.; Middlebury, N. Y.; Perry, N. Y.	Nov. 16, 1852.
Cordage machines	John W. Peet.	Schenectady, N. Y.	July 6, 1852.
Cordage, machines for making.	David Perry, assignor to F. and J. W. Slaughter.	Fredericksburg, Va.	June 15, 1852.
Cordage, machines for making.	Wm. Joslin.	Waterford, Saratoga co., N. Y.	Mar. 23, 1852.
Cotton battin	E. P. Rider.	Brooklyn, N. Y.	May 18, 1852.
Cotton yarn, preparing, for the manufacture of duck and other coarse fabrics.	Horatio N. Gambrell	Baltimore, Md.	June 15, 1852.
Felting cloth.	Joseph Weight, assignor to Samuel Lawrence.	Lawrence, Mass.	Jan. 6, 1852; in England, Oct. 7, 1841.
Felting cloth, machinery for.	George G. Bishop.	Norwalk, Conn.	Mar. 23, 1852; antedated Sept. 23, 1851.
Flocks, machines for preparing.	John R. Peters, Jr.	New York, N. Y.	June 22, 1852.
Fulling mills	William E. Underwood.	Middlefield, Hampshire co., Mass.	Dec. 21, 1852.
Gins, cotton	Thomas J. Laws.	Washington, Hempstead co., Ark.	Mar. 16, 1852.
Gins for long staples of cotton.	Calvin Willey, Jr., assignor to A. J. Brown, of Chicago, and R. L. Dunlap, of Dunlap's Prairie, Illinois, ex-ecutors of the estate of Calvin Willey, Jr., deceased, and Uriah Walker.	Chicago and Dunlap's Prairie, Ill.	April 27, 1852.
Hat bodies, machines for forming.	Thomas Walber	New York, N. Y.	Aug. 17, 1852.
Hat bodies, machines for manufacturing.	L. E. Hopkins.	New York, N. Y.	Dec. 21, 1852.
Hat bodies, machines for manufacturing.	Lansing E. Hopkins	New York, N. Y.	Dec. 7, 1852.

Hats	Francis Degen.....	New York, N. Y.....	Dec. 7, 1852.
Heddles, metallic.....	Jacob Senneff.....	Philadelphia, Pa.....	Jan. 13, 1852.
Hemp brakes	L. C. Chichester.....	Williamsburg, N. Y.....	Feb. 3, 1852.
Knitting machines.....	Timothy Bailey.....	Ballston Spa, N. Y.....	Feb. 24, 1852.
Knitting machines, rotary.....	Daniel Tainter.....	Worcester, Mass.....	Nov. 30, 1852.
Knitting machines, rotary.....	Horatio G. Sanford.....	Worcester, Mass.....	Nov. 30, 1852.
Looms, carpet.....	John A. Van Riper.....	New York, N. Y.....	Nov. 16, 1852.
Looms for weaving piled fabrics.....	Charles A. Maxwell.....	Troy, N. Y.....	Jan. 13, 1852.
Looms for weaving figured fabrics.....	B. H. Jenks and R. B. Goodyear, as- signors to B. H. Jenks.	Bridgburg, Philadelphia co., Pa.....	April 13, 1852.
Looms for weaving figured fabrics.....	Cornelius W. Blanchard.....	Clinton, Worcester co., Mass.....	Aug. 3, 1852.
Looms for weaving figured fabrics.....	Samuel and James Eccles.....	Kensington, Philadelphia co., Pa.....	Aug. 3, 1852.
Looms for weaving piled fabrics without the fig- uring wires.....	Robert W. Sievier.....	Middlesex co., England.....	June 1, 1852; in Eng- land, Sept. 5, 1844.
Looms, hand	S. C. Mendendall and Obed and Ezra King.....	Richmond, Wayne co., Ind.; Salem, Henry co., Iowa.....	Nov. 9, 1852.
Looms, mode of counterbalancing harnesses in ..	James Greenhalgh.....	Watford, Mass.....	Nov. 2, 1852.
Looms, the motion of the lay in ..	John Goulding.....	Worcester, Mass.....	June 15, 1852.
Looms, jacquard.....	John Goulding.....	Worcester, Worcester co., Mass.....	Aug. 3, 1852.
Looms, jacquard, pattern cards for.....	Saml. T. Thomas and Edward Everett.....	Lowell and Lawrence, Mass.....	Mar. 16, 1852.
Looms, knitting.....	William Benson.....	Newark, N. J.....	Mar. 2, 1852.
Looms, power.....	Rensselaer Reynolds.....	Valatia village, N. Y.....	June 1, 1852.
Looms for weaving pile fabrics	Samuel Richardson.....	Claremont, Sullivan co., N. H.....	Aug. 10, 1852.
Looms, shuttles for	Wm. Tucker.....	Blackstone, Mass.....	Dec. 28, 1852.
Looms, shuttle guides to	Horace T. Robbins.....	Lowell, Mass.....	Sept. 14, 1852.
Looms, stop motions of	L. B. Hoit.....	Millburn, Worcester co., Mass.....	Feb. 17, 1852.
Looms, mode of throwing shuttles in ..	Stephen C. Mendenhall.....	Richmond, Wayne co., Ind.....	Nov. 9, 1852.
Looms, temples for	E. and W. W. Dutcher.....	North Bennington, Vt.....	Dec. 28, 1852.
Mules, self-acting	Wanton Rouse.....	Taunton, Mass.....	Nov. 2, 1852.
Oakum, processes for preparing.....	John A. and George Cormack.....	New York, N. Y.....	June 8, 1852.
Paper, making and sizing, machines for	George Wm. Turner.....	London, England.....	Jan. 27, 1852.
Paper, sized, mode of drying	Jos. Kingsland, jr., and Norman White.....	Saugerties, N. Y.; New York, N. Y.....	Aug. 10, 1852.
Pile fabrics, apparatus for cutting the pile of ..	Jno. Johnson, assignor to Elias Johnson.....	Troy, N. Y.....	Jan. 13, 1852.
Pile fabrics, pile wires and pincers for weaving.....	E. B. Bigelow.....	Clinton, Worcester co., Mass.....	Nov. 2, 1852.
Pile wires, pincers for operating.....	Augustus Faulkner.....	Walpole, Cheshire co., N. H.....	Nov. 23, 1852.
Reeling machines.....	E. and S. Macy.....	Laurel, Franklin co., Ind.....	April 13, 1852.
Sewing machines.....	Isaac M. Singer.....	New York, N. Y.....	April 13, 1852.
Sewing machines.....	W. O. Grover and W. E. Baker.....	Boston and Roxbury, Mass.....	June 22, 1852.
Sewing machines.....	A. B. Wilson, assignor to N. Wheeler, A. B. Wilson, A. Warren, and G. P. Woodruff.....	Watertown, Conn.....	June 15, 1852.

IV.—Classified list of patents issued—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Sewing machines.....	Charles Miller.....	St. Louis, Mo.....	July 20, 1852.
Sewing machines.....	Otis Avery.....	Honesdale, Wayne co., Pa.....	Oct. 19, 1852.
Sewing machines.....	Jno. G. Bradeen, assignor to J. G. Bradeen and G. Perkins.	Boston, Mass.....	Nov. 2, 1852.
Sewing machines.....	Christopher Hodgkins, assignor to N. Hunt.	Boston, Mass.....	Nov. 2, 1852.
Shuttle for weaving hair-cloth, &c.....	Daniel S. Dewey.....	Hartford, Hartford co., Conn.....	April 27, 1852.
Spinner, ring.....	George H. Dodge.....	Attleborough, Bristol co., Mass.....	Jan. 27, 1852.
Spinning frames, cop.....	George H. Dodge.....	Attleborough, Mass.....	June 8, 1852.
Spinning machinery.....	Oliver Pearl and Henry P. Chandler.....	Lawrence, Essex co., Mass.....	Jan. 20, 1852.
Spinning machinery, connecting washers with spindles in.....	Horace T. Robbins.....	Lowell, Mass.....	Mar. 16, 1852.
Spinning machines, throstle.....	Charles H. Hunt.....	Lawrence, Essex co., Mass.....	Sept. 28, 1852.
Twisting-tubes in the formation of roving.....	Harvey Silver.....	Lowell, Mass.....	Nov. 9, 1852.
Wool-picking machines.....	Edward Kellogg.....	New Hartford, Litchfield co., Conn.....	Jan. 6, 1852.
Wool, machinery for combing.....	S. C. Lister and G. E. Donisthorp.....	York co., England.....	Oct. 26, 1852; in England, Mar. 20, 1850.
Wadding, machinery for making.....	Hiram T. Lawton.....	Troy, N. Y.....	Nov. 23, 1852.

CLASS IV.—Chemical processes, manufactures, and compounds, including medicines, dyeing, color making, distilling, soap and candle making, mortars, cements, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Acid, sulphuric, manufacture of.....	Carl Hinrichs.....	New York, N. Y.....	Sept. 7, 1852.
Archil, preparation of.....	Leon Jarosson.....	New York, N. Y.....	June 15, 1852.
Beer material, concentrated.....	Franz G. Rietsch.....	Rudolitz, Moravia, empire of Austria.....	Feb. 3, 1852.
Bleaching ivory, processes of.....	Ulysses Pratt.....	Deep River, Conn.....	Jan. 6, 1852; antedated July 6, 1851.

Candle wicks	C. A. Wortendyke.....	Newtown, N. J.....	Mar. 30, 1852.
Candy, sugar, machines for making	Bartholomew O'Brien	Rochester, Monroe co., N. Y.....	Jan. 13, 1852.
Cements	B. S. Welch.....	Brooklyn, N. Y.....	May 18, 1852.
Compositions, explosive, for blasting rocks.....	Edward Callow.....	London, England.....	Feb. 17, 1852; in England, August 6, 1850.
Composition of enamels	Jno. G. Dunn and Alfred F. Howes.....	Laurenceburg, Dearborn co., Ind.....	Sept. 7, 1852.
Compositions for preserving butter.....	Louis De Corn.....	Cincinnati, Ohio.....	Aug. 3, 1852.
Compounds for uniting steel and iron.....	Boyd C. Leavitt, assignor to Jos. S. Bishop and Rd. H. Libbey.....	Newport, Me.....	July 27, 1852.
Distilling apparatus	Charles Delescluze.....	New York, N. Y.....	Oct. 12, 1852.
Gas, apparatus for regulating and measuring the flow of.....	William B. Leonard.....	New York, N. Y.....	Feb. 10, 1852.
Gas, illuminating, process of making.....	Geo. Darré, P. Nicholas, and F. Lopez.....	Marseilles, France	Dec. 28, 1852; in France, Sept. 27, 1851.
Gas, illuminating, processes for making.....	Henry W. Adams	New York, N. Y.....	Aug. 10, 1852.
Gas, illuminating, apparatus.....	Robert Foulis.....	St. John, New Brunswick	Oct. 12, 1852.
Gas meters.....	John Laidlaw	New York, N. Y.....	Nov. 2, 1852.
Gas purifying apparatus.....	Abram Longbottom	New York, N. Y.....	Feb. 3, 1852.
Gas regulators.....	Walter Kidder.....	Lowell, Mass.....	Oct. 12, 1852.
Gas regulators.....	Walter Kidder.....	Lowell, Mass.....	Oct. 12, 1852.
Gas regulators.....	Walter Kidder.....	Lowell, Mass.....	Oct. 12, 1852.
Gutta percha, processes of manufacturing.....	John Rider.....	New York, N. Y.....	June 1, 1852.
Hydro-sulphurets, treatment of, and manufacturing carbonates and sulphur compounds.....	Charles Lennig.....	Philadelphia, Pa.....	Mar. 16, 1852.
India-rubber bat cloth, modes of making.....	Charles Goodyear.....	New Haven, Conn.....	Oct. 12, 1852; in England, June 8, 1850.
Indian rubber, preserving	Frederick Bronner	Vera Cruz, Mexico.....	Sept. 7, 1852.
Ink, vessels for making	Alexander Harrison.....	Philadelphia, Pa.....	Feb. 24, 1852.
Imitation stone. (See Class XV.)	Frederick Seitz.....	Easton, Pa.....	Jan. 20, 1852.
Light, benzole. (See Class V.)	Robert Wicks and James Faulkner, Jr.....	Williamsburgh, N. Y.....	May 11, 1852.
Mash tuns.....	Wm. H. Mason.....	Boston, Mass.....	May 25, 1852.
Oils, lubricating.....	James Young.....	Manchester, England	Mar. 23, 1852; in England, Oct. 7, 1850.
Oil, paraffine, making.....	Wash. F. Davis, assignor to B. Cornell.....	New York, N. Y.....	Aug. 17, 1852.
Paints, processes for making	Heman S. Lucas	Chester, Hampden co., Mass.....	Nov. 23, 1852.
Paints, processes for preparing.....	Erasmus A. Pond.....	Rutland, Vt.....	Dec. 7, 1852.
Pill-making machines.....	John Akrell.....	Williamsburgh, N. Y.....	June 8, 1852.
Retorts for chemical furnaces, construction of.....	James P. Haskin.....	Syracuse, Onondaga co., N. Y.....	Sept. 7, 1852.
Salt, common, manufacture of	Wm. McCord.....	New York, N. Y.....	July 27, 1852.
Soaps			

IV.—*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Soap boilers	John R. St. John	New York, N. Y.	June 8, 1852; in Eng- land, June 6, 1851.
Soda ash and carbonates of soda, making	Henry Pemberton	Philadelphia, Pa.	Oct. 19, 1852.
Soda, chromate of, manufacture of	John Swindells	Manchester, England	Dec. 21, 1852; in Eng- land, Nov. 14, 1850.
Stills, worm tubs for	George Johnston	Farmington, Iowa	May 25, 1852
Sugar, apparatus for boiling	Don Juan Ramos, assignor to J. C. Gallaher and Wm. F. Tirado.	Island of Porto Rico; Philadelphia, Pa.	June 29, 1852; in Spain, April 29, 1851.
Sugar-boiling apparatus	William H. Clement	Philadelphia, Pa.	Oct. 12, 1852; in Eng- land, Nov. 21, 1848.
Sugar, processes, for defecating	Robert and John Oxland	Plymouth, England	July 6, 1852; in Eng- land, May 15, 1851.
Sugar, processes, for the manufacture of	Don Juan Ramos, assignor to J. C. Gallaher and Wm. F. Tirado.	Island of Porto Rico; Philadelphia, Pa.	June 29, 1852; in Spain, April 29, 1851.
Sugar pans, scumming apparatus for	William H. Clement	Philadelphia, Pa.	Oct. 12, 1852; in Eng- land, July 23, 1846.
Wort, refrigerators of. (See Class XVII, R.)	Henry W. Adams	New York, N. Y.	July 27, 1852.
Zinc, preparing from the ores	Samuel T. Jones	New York, N. Y.	Feb. 24, 1852.
Zinc, white, manufacture of			

CLASS V.—*Calorifics, comprising lamps, fireplaces, stoves, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boilers, cooking	L. S. De Bibory	Baltimore, Md.	May 11, 1852.
Burners, gas	A. H. Wood	Boston, Mass.	Nov. 9, 1852.
Caloriferes	Samuel Whitemarsh	Northampton, Hampshire co., Mass.	Aug. 17, 1852.
Cooking apparatus	Joseph Smolinski	New York, N. Y.	May 25, 1852.
Dryers, grain	T. E. Weed	Williamsburgh, Kings co., Mass.	Feb. 24, 1852.

IV.—*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Stove, cooking.....	Manly C. Sadler.....	Brockport, Monroe co., N. Y.....	Nov. 2, 1852.
Stove, cooking.....	H. J. Ruggles.....	West Poutney, Vt.....	Nov. 30, 1852.
Stove doors, &c., hinges for.....	Chas. J. Woolson.....	Cleveland, Ohio.....	Mar. 16, 1852.
Stoves, air heating.....	J. M. Thatcher.....	Lansingburg, Rensselaer co., N. Y.....	Mar. 23, 1852.
Thermostat, for regulating heat.....	Thomas J. Sloan.....	New York, N. Y.....	July 6, 1852.
Ventilating railroad cars.....	N. S. Barnum and L. Whitney.....	New Haven, Conn.....	Jan. 6, 1852.
Ventilators.....	Mortimer M. Camp.....	New Haven, Conn.....	Aug. 17, 1852.
Ventilators.....	David Wells.....	Lowell, Mass.....	Nov. 2, 1852.
Ventilators.....	A. S. Dozier.....	Norfolk, Va.....	Dec. 21, 1852.
Ventilating windows for railroad cars.....	H. M. Paine.....	Worcester, Mass.....	Jan. 6, 1852.

CLASS VI.—*Steam and gas engines, including boilers and furnaces therefor, and parts thereof.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boilers, apparatus for feeding.....	Andrew Walker, jr.....	St. Johnsbury, Vt.....	Aug. 24, 1852.
Boilers, apparatus for heating feed-water of steam.....	M. W. Baldwin and David Clark.....	Philadelphia, Pa.; Schuylkill Haven, Pa.....	Oct. 12, 1852.
Boilers, steam.....	James W. Farrell.....	Reading, Berks county, Pa.....	May 18, 1852.
Boilers, steam.....	James Millholland.....	Reading, Berks county, Pa.....	Feb. 17, 1852.
Boilers, steam, metre for.....	William H. Lindsay.....	New York, N. Y.....	Feb. 17, 1852.
Boiler, steam, arrangement of.....	William Barnhill.....	Pittsburg, Pa.....	March 2, 1852.
Boilers, steam, safety apparatus for.....	Henry Waterman.....	Williamsburg, N. Y.....	Dec. 28, 1852.
Boilers, sheet water space-stud brace for flues of.....	Andrew Lamb and William Alcott Summers.....	Southampton and Millbrooke, Hants county, England.....	April 27, 1852; in Eng- land, December 9, 1848.
Cut-offs.....	Frederick E. Sickles.....	New York, N. Y.....	Feb. 24, 1852.
Cut-off valve motion.....	S. W. Rogers.....	Baltimore, Md.....	Dec. 21, 1852.
Engines, electro-magnetic. (See Class VIII.) Engines, electro-magnetic. (See Class VIII.) Engines which use steam expansively, equalizing apparatus for.....	Wm. H. Morrison.....	Shelbyville, Indiana.....	Dec. 21, 1852.

Engines, locomotive.....	H. R. Remsen and P. M. Hutton.....	Troy, N. Y.....	June 29, 1852.
Engines, rotary, abutment motion for reversible..	Cassius A. Mills.....	Cold Water, Branch county, Mich.....	Aug. 24, 1852.
Engines, steam, governor for.....	Geo. S. Stearns and William Hodgson.	Cincinnati, Ohio.....	Aug. 31, 1852.
Engines, steam, metallic stuffing-box packing in...	Ebenezer Winship.....	New York, N. Y.....	Aug. 31, 1852.
Eccentric, adjustable, mechanism for actuating an.	Matthew Stubbs.....	Cincinnati, Ohio.....	April 6, 1852.
Gauge, float, feed regulator, &c., for steam-boil-	Thomas J. Sloan.....	New York, N. Y.....	April 27, 1852.
ers, &c.			
Gauge, pressure.....	Benjamin Crawford.....	Alleghany city, Pa.....	Mar. 16, 1852.
Gauge, steam and water.....	William C. Grimes.....	Philadelphia, Pa.....	Jan. 6, 1852; antedated July 6, 1851.
Gauge, water, of boilers, &c.....	Benjamin Crawford.....	Alleghany city, Pa.....	Mar. 9, 1852.
Governors.....	John Tremper.....	Buffalo, N. Y.....	Oct. 12, 1852.
Grease cocks.....	Robert M. Wade.....	Wadestville, Va.....	June 8, 1852.
Locomotives, &c., feed water of, apparatus for heating.	Israel P. Magoon.....	St. Johnsbury, Caledonia county, Vt....	Sept. 7, 1852.
Metres, fluid.....	William H. Lindsay.....	New York, N. Y.....	June 22, 1852.
Safety-valves, differential.....	John McClinic.....	Philadelphia, Pa.....	May 4, 1852.
Spark-arresters.....	V. P. & B. Kimball.....	Watertown, Jefferson county, N. Y....	Oct. 5, 1852.
Spark-arresters.....	J. Leeds, H. H. Oat, jr., and A. A. Oat, assignors to J. Leeds.	Philadelphia, Pa.....	Aug. 17, 1852.
Valve motion, duplex eccentric.....	John J. G. Collins.....	Chester, Delaware county, Pa.....	Feb. 24, 1852.
Valves of oscillating engines upon their seats, method of keeping the.	Ephraim Morris.....	New York, N. Y.....	Feb. 3, 1852.
Valves, puppet, mode of grinding while the en- gine is in motion.	Enos Rogers.....	New York, N. Y.....	July 6, 1852.
Valves for steam-engines.....	Matthias W. Baldwin.....	Philadelphia, Pa.....	April 27, 1852.
Valves, safety, differential. (See Safety-valves.)			
Valves, safety.....	Alfred Guthrie.....	Chicago, Ill.....	Oct. 12, 1852.
Valves, the relief, in partially condensing engines, mechanism for operating.	William Few and Francis Armstrong..	St. Louis, Mo.; New Orleans, La.....	Jan. 27, 1852.

IV.—Classified list of patents issued—Continued.

CLASS VII.—Navigation and maritime implements, comprising all vessels for conveyance on water, their construction, rigging, and propulsion, diving dresses, life-preservers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Anchor, compound.....	Samuel N. Miller.....	West Roxbury, Mass.....	June 29, 1852.
Bilge water, &c., apparatus for elevating and discharging.....	Nehemiah Dodge.....	North Adams, Berkshire county, Mass.	Mar. 19, 1852.
Capitana.....	Peter Roberta.....	New York, N. Y.....	Feb. 17, 1852.
Life preservers.....	Stephen Athro.....	Buffalo, N. Y.....	Oct. 19, 1852.
Life-preserving seat.....	George P. Tewksbury.....	Boston, Mass.....	Oct. 19, 1852.
Paddle-wheel, oblique bucket.....	George S. Wickett.....	Oswego, Oswego county, N. Y.....	April 13, 1852.
Paddle-wheels, valves or gates for oblique float.....	Jacob C. Carnecross.....	Philadelphia, Pa.....	June 15, 1852.
Propelling vesicula.....	Matthew A. Crooker.....	New York, N. Y.....	June 29, 1852.
Propellers, vibrating.....	Franklin Kelsey.....	Middletown, Conn.....	Nov. 2, 1852.
Sail haul.....	Samuel Parker.....	New York, N. Y.....	June 29, 1852.
Serving-mallets.....	D. H. Southworth.....	New York, N. Y.....	Nov. 16, 1852.
Ships' blocks.....	William and Stephen G. Coleman.....	Providence, R. I.....	Feb. 3, 1852.
Ships' blocks.....	Charles H. Platt.....	New York, N. Y.....	May 18, 1852.
Ships' davits.....	Charles Percy.....	New York, N. Y.....	Jan. 27, 1852.
Signals, marine.....	Thomas H. Dodge.....	Nashua, Hillsborough, N. H.....	Mar. 23, 1852.
Signals, marine.....	Thomas H. Dodge.....	Nashua, Hillsborough, N. H.....	Nov. 9, 1852.
Steering apparatus.....	Norman W. Wheeler.....	Buffalo, N. Y.....	Feb. 3, 1852.
Steering apparatus.....	Alfred Swingle and Nehemiah Hunt.....	Boston, Mass.....	April 27, 1852.
Steering apparatus, relief.....	Nathaniel T. Edson.....	New Orleans, La.....	April 27, 1852.
Steering submarine vessels.....	L. D. Phillips.....	Michigan City, Laporte county, Ia.....	Nov. 9, 1852.
Thimbles for rigging, &c., machine for making.....	William Field.....	Providence, R. I.....	Nov. 16, 1852.
Vessels, apparatus for lightening.....	Orculus T. Williams.....	Southland, Livingston county, Ky.....	Feb. 24, 1852.
Vessels, yards of, parrel for.....	Daniel S. Bayley.....	Brooklyn, N. Y.....	Dec. 28, 1852.

CLASS VIII.—Mathematical, philosophical, and optical instruments, including clocks, chronometers, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Battery, galvanic.....	Louis Drescher.....	New York, N. Y.....	Dec. 7, 1852.
Bill registers.....	J. N. Ayres.....	Siamford, Fairfield county, Ct.....	Aug. 24, 1852.
Clocks, alarm.....	Jonathan S. Turner.....	New Haven, Ct.....	July 13, 1852.
Clocks, galvanic.....	Moses G. Farmer.....	Salem, Mass.....	Sept. 21, 1852.
Compasses for determining variation from local causes.	John R. St. John, assignor to James Renwick, G. F. Barnard, and E. B. St. John.	New York, N. Y.....	Mar. 2, 1852; in England, Dec. 27, 1850.
Electro-magnetic alarm bells.....	Moses G. Farmer.....	Salem, Mass.....	May 4, 1852.
Electro-magnetic engines.....	John S. Gustin.....	Trenton, N. J.....	Sept. 28, 1852.
Electro-magnetic engines.....	John S. Gustin.....	Trenton, N. J.....	Oct. 12, 1852.
Electro-magnetic fire alarms.....	Henry Van Ausdall.....	Eaton, Preble county, Ohio.....	Aug. 31, 1852.
Escapements, duplex.....	Charles E. Jacot.....	New York, N. Y.....	July 20, 1852.
Galvanic battery. (See Battery, galvanic.)	Eugene Bourdon.....	Paris, France.....	Aug. 3, 1852; French patent, June 18, 1849.
Gauges, pressure.....	A. B. Latta.....	Cincinnati, Ohio.....	Mar. 16, 1852.
Joints around glass tubes for philosophical apparatus.			
Lamps, alarm time-piece for lighting. (See Class V.)			
Leases, glass, manufacture of.....	John L. Gilliland.....	New York, N. Y.....	Aug. 10, 1852.
Level, reflecting spirit and square.....	Francis Wilbar.....	Roxbury, Norfolk county, Mass.....	April 20, 1852.
Lightning rods.....	James Spratt.....	Cincinnati, Ohio.....	May 4, 1852.
Lightning rods.....	Herman H. Homan.....	Cincinnati, Ohio.....	Sept. 14, 1852.
Square, centre, for finding the centre of a circle.	Nathan Ames, assignor to Walter Bryant.	Saugus, Mass.; Boston, Mass.....	July 6, 1852.
Tally-board. (See Class XXII.)			
Telegraph, magnetic printing.....	R. E. House.....	New York, N. Y.....	Dec. 28, 1852.
Telegraphs, signal.....	Charles Latimer.....	Washington, D. C.....	Aug. 24, 1852.
Time-pieces.....	Silas B. Terry.....	Plymouth, Litchfield county, Ct.....	Oct. 5, 1852.

IV.—*Classified list of patents issued*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Time-pieces	S. R. Wilnot.....	New Haven, Ct.....	June 22, 1852.
Watch-chain swivels.....	Samuel Y. D. Arrowsmith.....	New York, N. Y.....	Feb. 10, 1852.
Watch keys.....	Charles E. Jacot.....	New York, N. Y.....	Oct. 26, 1852.
Whaling apparatus, electric.....	Albert Sonnenburg and Philip Rechten, assignors to Christian A. Hainaken.	Bremen, Germany; United States.....	Mar. 30, 1852.

CLASS IX.—*Civil engineering and architecture, comprising works on rail and common roads, bridges, canals, wharves, docks, rivers, weirs, dams, and other internal improvements, buildings, roofs, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Augers, submarine.....	Norman Blake.....	Ira, Cayuga county, N. Y.....	April 20, 1852.
Blasting rocks under water.....	Benjamin Maillefert.....	New York, N. Y.....	Mar. 2, 1852.
Bridges.....	Amni White.....	Boston, Mass.....	Mar. 3, 1852.
Bridges, construction of.....	Wendall Bollman.....	Baltimore, Md.....	Feb. 6, 1852.
Bridges, construction of.....	Abel Bradley and Elijah Valentine.....	Munson, Mass.....	Jan. 6, 1852.
Bridges, construction of.....	J. B. Gridley.....	Brooklyn, N. Y.....	July 6, 1852.
Bridging navigable streams.....	Benjamin F. Lee.....	New York, N. Y.....	Mar. 2, 1852.
Caissons, cast-iron.....	James P. Duffey.....	Philadelphia, Pa.....	July 13, 1852.
Canal lock gates.....	Charles Neer.....	Troy, N. Y.....	Mar. 9, 1852.
Canal locks.....	W. W. Virdin.....	Havre de-Grace, Harford county, Md.....	Jan. 20, 1852.
Chairs, railroad, manufacture of.....	Peter P. R. Hayden.....	Columbus, Franklin county, Ohio.....	Jan. 17, 1852.
Chairs, wrought-iron railroad, machine for making.....	Robert Griffiths.....	Newport, Campbell county, Ky.....	Aug. 17, 1852.
Chairs, railroad, machinery for making.....	J. F. Winslow and J. Snyder.....	Troy, N. Y.....	Dec. 28, 1852.
Docks, floating.....	Orrillus T. Williams.....	Smithland, Livingston county, Ky.....	Feb. 24, 1852.
Doors, double-acting.....	William Rippon.....	Providence, Rhode Island.....	July 6, 1852.
Dredging machines.....	James Hamilton.....	New York, N. Y.....	Mar. 30, 1852; French patent, December 16, 1845.
Drills, rock.....	William F. Ash.....	Springfield, Ohio.....	May 4, 1852.

CLASS X.—*Land conveyance, comprising carriages, cars, and other vehicles used on roads, and parts thereof.*

Excavating and dredging machines..... Excavating machines..... Fences..... Fuses, machinery for making..... Gates, balance..... Gates, double..... Railings, iron..... Rails, hand, machines for cutting..... Sewers, street..... Signals, railroad..... Water-closets..... Wells, artesian, apparatus for boring..... Window frames..... Window sashes, expanding..... Window sashes, expanding.....	Calvin Wiley, jr., assignor to Calvin Wiley, jr., and Urial Walker. Charles Bishop..... John Card..... Albert F. Andrews..... William C. Van Hoesen..... J. S. Brown..... George Hess, assignor to Sylvanus Shimer..... George B. Pullinger..... Willard Day..... Aurin Bugbee..... John Thompson..... Henry C. Smith..... Mighill Nuting..... Mighill Nuting.....	Chicago, Ill..... Norwalk, Huron county, Ohio..... Gainesville, N. Y..... Avon, Connecticut..... Leeds, Greene county, N. Y..... Washington, D. C..... Easton, Northampton, Pa..... Philadelphia, Pa..... Brooklyn, N. Y..... Charlestown, Mass..... Kensington, Philadelphia county, Pa..... Portland, Cumberland county, Me..... Portland, Cumberland county, Me..... Portland, Cumberland county, Me.....	Feb. 10, 1852. Mar. 30, 1852. Feb. 17, 1852. May 25, 1852. April 20, 1852. Aug. 10, 1852. Jan. 6, 1852. Aug. 24, 1852. Feb. 3, 1852. Sept. 7, 1852. Mar. 30, 1852. Oct. 5, 1852. Oct. 5, 1852; antedated June 16, 1852. Oct. 12, 1852.
Inventions or discoveries..... Axletree arms..... Axles, carriage..... Axles, railroad car, divided..... Brakes, railroad car..... Brakes, railroad car..... Brakes, railroad car..... Boxes for journals..... Brakes, railroad car..... Brakes, railroad car..... Brakes, railroad car..... Brakes, railroad car.....	Patentees. David Phillips..... Kingston Goddard..... William S. Loughborough..... Birdsill Holly, assignor to Silas Hewit, Edward S. Latham, Birdsill Holly, and Abel Downs..... Thomas Walber..... Benjamin Kraft..... Henry Turner..... Thomas G. McLaughlin..... William Montgomery..... L. F. Thompson and A. G. Bachelder, assignors to H. Tanner.....	Residence. Sharon, Mercer co., Pa..... Philadelphia, Pa..... Victor, N. Y..... Seneca Falls, N. Y..... New York, N. Y..... Reading, Berks co., Pa..... Charlestown, N. H..... Kensington, Philadelphia co., Pa..... Roxbury, Massachusetts..... Charlestown, Mass.; Lowell, Mass.; Buffalo, N. Y.	Date of patent. Feb. 3, 1852. June 15, 1852. June 22, 1852. Feb. 10, 1852. Mar. 16, 1852. April 20, 1852; antedated Dec. 31, 1851. April 27, 1852. May 4, 1852. July 6, 1852. July 6, 1852.

IV.—*Classified list of patents issued*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brakes, railroad car.....	Joseph P. Martin.....	Philadelphia, Pa.....	July 13, 1852.
Brakes, railroad car.....	J. Houston and E. Ross.....	Manchester, Hillsborough co., N. H.....	July 20, 1852.
Brakes, railroad car.....	William Hall.....	North Adams, Berkshire co., Mass.....	July 20, 1852.
Brakes, railroad car.....	John Schoenherr.....	Reading, Berks co., Pa.....	Aug. 10, 1852.
Car foot.....	Nehemiah Hodge.....	North Adams, Mass.....	June 22, 1852.
Car coupling, railroad.....	James Turner.....	East Nassau, Rensselaer co., N. Y.....	July 20, 1852.
Car seats.....	Wm. L. Bass.....	Cambridge, Middlesex, Mass.....	July 20, 1852.
Car seats.....	John Briggs.....	Boston, Mass.....	July 6, 1852.
Car seats, railroad.....	Abel B. Euel.....	Westmoreland, Oneida county, N. Y.....	May 11, 1852.
Car seats, railroad.....	Samuel M. Perry.....	New York, N. Y.....	July 27, 1852.
Car seats, railroad.....	Charles P. Bailey.....	Zanesville, Muskingum, Ohio.....	Aug. 3, 1852.
Car seats, railroad.....	Daniel H. Wiswell.....	Buffalo, N. Y.....	Nov. 16, 1852.
Carriage curtains, lock for.....	George Cook.....	New Haven, Conn.....	Jan. 6, 1852.
Carriages, running gear of.....	Gustavus Haussknecht.....	New Haven, Conn.....	Jan. 13, 1852.
Carriages.....	C. F. Verleger.....	Baltimore, Md.....	Feb. 3, 1852.
Cars, railroad.....	Jonathan Fox.....	Manchester, Passaic co., N. J.....	Aug. 10, 1852.
Cart, self-loading and dumping.....	Henry D. Taylor.....	Newark, N. J.....	Feb. 3, 1852.
Chairs.....	Charles Waterbury.....	Bridgeport, Conn.....	June 23, 1852.
Cow-catcher.....	B. T. Stowell.....	Waddam's Grove, Stephenson co., Ill.....	April 27, 1852.
Frogs, railroad, method of securing movable points of.....	John T. Hammit.....	Philadelphia, Pa.....	Dec. 7, 1852.
Hubs, carriage.....	Cook Dailing.....	Utica, N. Y.....	June 8, 1852.
Hubs for boxes, apparatus for boring. (See Boring, &c., Class XIV.)	M. S. Curtis and Edgar St. John.....	Binghampton, Broome co., N. Y.....	Aug. 10, 1852.
Omnibus register.....	S. S. Barry.....	Brownhelm, Ohio.....	Jan. 6, 1852.
Omnibus, registers for, and for other purposes.....	F. O. Dechamps.....	Philadelphia, Pa.....	Mar. 2, 1852.
Planes, inclined, method of ascending.....	J. Z. A. Wagner.....	Philadelphia, Pa.....	Sept. 28, 1852.
Railroad gates.....	Josiah Ashenfelder.....	Philadelphia, Pa.....	Mar. 23, 1852.
Railroads, apparatus for transporting trains on inclined planes of.....	James S. French.....	Old Point Comfort, Va.....	June 22, 1852.
Railroads, mode of preventing collisions on.....	Edbert P. Carter.....	Yorkshire, Cattaraugus co., N. Y.....	Feb. 17, 1852.
	Samuel McElfatrick.....	Dauphin, Pa.....	Oct. 12, 1852.
	Thomas A. Davies.....	New York, N. Y.....	Feb. 10, 1852.

Sleds, hold-back for.....	Perry Dickson.....	Blooming Valley, Crawford co., Pa.....	April 27, 1852.
Spark deflector.....	Albert Eames.....	Springfield, Mass.....	June 8, 1852.
Spikes, machine for drawing.....	Daniel Hale.....	Hinsdale, Cattaraugus co., N. Y.....	April 20, 1852.
Spring, pneumatic.....	Elijah Ware.....	Roxbury, Mass.....	July 6, 1852.
Switches, railroad.....	A. S. Miller.....	Republic, Seneca co., Ohio.....	Jan. 27, 1852.
Switches, railroad.....	Ira Reynolds.....	Republic, Seneca co., Ohio.....	Jan. 27, 1852.
Switches, railroad.....	Amos Hodge.....	Adams, Berkshire co., Mass.....	Feb. 10, 1852.
Switches, railroad.....	John F. Klein.....	Trenton, Mercer co., N. J.....	April 27, 1852.
Swingletrees.....	Charles Howard.....	Alton, Madison co., Ill.....	Mar. 23, 1852.
Track clearer, railroad.....	Simeon Minkler.....	Chazy, Clinton co., N. Y.....	July 27, 1852.
Truck, railroad.....	Edwin Stanley.....	Bennington, Wyoming co., N. Y.....	Aug. 24, 1852.
Trucks and brakes, railroad car.....	E. G. Ous.....	Bergen, N. J.....	May 25, 1852.
Trucks for locomotives.....	John L. White.....	Corning, Steuben co., N. Y.....	Jan. 6, 1852.
Trucks, railroad car.....	Calcb R. Disbrow.....	Bath, N. Y.....	June 29, 1852.
Wagons, dumping.....	Thomas Castor.....	Frankford, Philadelphia co., Pa.....	Aug. 3, 1852.
Wagons, dumping.....	Abraham V. Cross.....	Washington, D. C.....	June 22, 1852.
Wheels, carriage, machines for making.....	Chauncey H. Guard.....	Brownville, Jefferson co., N. Y.....	Sept. 7, 1852.
Wheels and axles of cars, protecting, by encasing them.....	A. L. Finch.....	New Britain, Hartford co., Conn.....	April 20, 1852.
Wheels, car, and rails.....	John Valentine.....	New York, N. Y.....	April 6, 1852.
Wheels, cast-iron car.....	H. W. Woodruff.....	Watertown, N. Y.....	Jan. 6, 1852.
Wheels, cast-iron car.....	Albert G. Bristol and Joel C. Jackson.....	Rochester, N. Y.....	Feb. 24, 1852.
Wheels, cast-iron car.....	Orson Moulton.....	Blackstone, Worcester co., Mass.....	Mar. 2, 1852.
Wheels, cast-iron car.....	Hiram W. Moore.....	Bridgeport, Fairfield co., Conn.....	Mar. 2, 1852.
Wheels, cast-iron car.....	Stephen Thurston.....	Scranton, Pa.....	May 25, 1852.
Wheels, cast-iron car.....	Hiram H. Scoville.....	Chicago, Ill.....	July 13, 1852.
Wheels, cast-iron car.....	Daniel R. Rawl.....	Rochester, N. Y.....	June 1, 1852.
Wheels, cast-iron car.....	Peter Dorsch.....	Schenectady, N. Y.....	June 15, 1852.
Wheels, railroad car.....	Nehemiah Hodge.....	Adams, Mass.....	June 1, 1852.
Whiffletree.....	Dewit C. Williams.....	Madison, Lake co., Ohio.....	Nov. 23, 1852.
Whiffletree hook.....	E. A. Palmer and A. J. Simmons.....	Clayville, Oneida co., N. Y.....	Sept. 7, 1852.
Yoke, neck.....	John T. Plato.....	Jasper, Steuben co., N. Y.....	Jan. 27, 1852.

IV.—*Classified list of patents issued—Continued.*

CLASS XI.—*Hydraulics and pneumatics, including water wheels, wind mills, and other implements operated on by air or water, or employed in raising or delivering fluids.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Cocks with pipes, connecting.....	Daniel A. Webster.....	New York, N. Y.....	June 29, 1852; antedated Dec. 29, 1851.
Coupling, hose.....	A. W. Cary.....	Brockport, N. Y.....	Feb. 10, 1852.
Engines, fire.....	Orville G. Adkins.....	Oswego, Oswego co., N. Y.....	July 20, 1852.
Faucets, measuring.....	J. R. Byler and George W. Sensesnich.	Beartown, Pa.....	May 11, 1852.
Funnels.....	Christen Schneider.....	Washington, D. C.....	May 4, 1852.
Motors, water.....	Samuel Huse.....	Boston, Mass.....	Jan. 27, 1852.
Pipe, lead. (See Class No. II, Lead pipe, &c.)	Abel Barker.....	Honesdale, Wayne co., Pa.....	Feb. 17, 1852.
Pumps.....	Clark Polley.....	May's Landing, N. J.....	Dec. 14, 1852.
Pumps, endless chain, buckets for.....	H. C. Spaulding and G. Stickney.....	Hartford, Conn.....	April 20, 1852.
Pumps, rotary.....	Joel R. Bassett.....	Cincinnati, Ohio.....	June 23, 1852.
Pumps, valves for.....	N. H. Lebbey.....	Charleston, S. C.....	April 20, 1852.
Tubes, machine for making sheet metal. (See Class II.)	Hiram Strat.....	Covington, Ky.....	Feb. 24, 1852.
Water, apparatus for raising.....	Joel B. Nott and W. S. Kelley.....	Guilderland, Albany co.; Princeton, Schenectady co., N. Y.....	Feb. 24, 1852.
Water-gun for extinguishing fires.....	Ira Jagger.....	Albany, N. Y.....	Oct. 19, 1852.
Water-wheels.....	Erasmus Smith.....	Norwich, Chenango co., N. Y.....	Oct. 12, 1852.
Water-wheels, packing.....			

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Derricks.....	Selah Hill and Charles M. Dupuy, jr.	Jersey City, N. J.; Rondout, N. Y.....	June 15, 1852.
Lever jacks.....	Lewis H. Davis, assignor to J. A. Dugdale.	Chester county, Pa.....	May 4, 1852.
Presses for bundling flocculent and other substances.	Daniel Kellogg.....	Pittsfield, Washtenaw co., Mich.....	Oct. 12, 1852.
Presses, cotton.....	Lewis Lewis.....	Vicksburg, Miss.....	Mar. 2, 1852.
Presses, cotton.....	Jacob G. Winget.....	Vicksburg, Miss.....	July 13, 1852.
Presses, cotton.....	Lewis Lewis.....	Vicksburg, Miss.....	Aug. 17, 1852.
Presses, oil.....	William P. Chadwick.....	Edgartown, Dukes co., Mass.....	Nov. 9, 1852.
Pressing tobacco, machines for. (See Class XXII.)	Robert Newell.....	Lebanon, Boone co., Indiana.....	May 11, 1852.
Scales, platform.....	William P. Goolman and William Holtselaw, jr.	Springtown, Hendricks co., Indiana...	Aug. 3, 1852.
Scales for weighing.....	William and Thomas Schnebly.....	New York, N. Y.....	Feb. 17, 1852.
Weighing machines.....	Amzi C. Semple.....	Cincinnati, Ohio.....	Jan. 27, 1852.
Windlasses.....			

CLASS XIII.—Grinding mills and mill gearing, including grain mills, mechanical movements, and horse-powers.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bran dusters.....	Abel Hildreth.....	Newark, Licking co., N. Y.....	Feb. 17, 1852.
Bran dusters.....	Lewis Fagin.....	Cincinnati, Ohio.....	Feb. 17, 1852.
Clutches, friction.....	Gerard Suckles.....	Brooklyn, N. Y.....	Mar. 2, 1852.
Clutch, friction.....	Wendell Wright.....	New York, N. Y.....	June 15, 1852.
Corn shellers.....	David Eldridge.....	Philadelphia, Pa.....	June 1, 1852.
Crusher, quartz.....	James H. Sweet.....	Boston, Mass.....	Feb. 10, 1852.
Flour bolts.....	Samuel Cook.....	Adams's Basin, Monroe co., N. Y.....	Mar. 9, 1852.
Flour bolts.....	David Marsh.....	Fairfield, Conn.....	May 25, 1852.

IV.—Classified list of patents issued—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Governors.....	Ephraim Morris.....	New York, N. Y.....	Feb. 10, 1852.
Grinding quartz, mill for.....	Horatio Bastedl.....	New York, N. Y.....	Jan. 20, 1852.
Grinding quartz, mills for.....	Smith Cram.....	New York, N. Y.....	Feb. 10, 1852.
Hominy machines.....	Samuel Null.....	Tuneytown, Md.....	May 25, 1852.
Hominy mills.....	James Hughes.....	Cambridge, Wayne co., Indiana.....	Oct. 12, 1852.
Horse-power.....	David Russell.....	St. Louis, Mo.....	Aug. 24, 1852.
Horse-powers.....	M. H. Cornell.....	Feasterville, Bucks co., Pa.....	Feb. 10, 1852.
Horse-powers.....	Aaron D. Crane.....	Newark, N. J.....	June 22, 1852.
Horse-powers, endless chain.....	Horace L. Emery.....	Albany, N. Y.....	Feb. 24, 1852.
Horse-powers, endless chain.....	Theodore Sharp.....	Albany, N. Y.....	Mar. 2, 1852.
Mill for crushing quartz.....	John W. Cochran.....	New York, N. Y.....	June 15, 1852.
Mill dress.....	John W. Kane.....	New Carlisle, Clark co., Ohio.....	Aug. 10, 1852.
Mill spindles.....	Egbert T. Butler.....	Buffalo, N. Y.....	Jan. 27, 1852.
Mill spindles, hanging.....	William H. Naracon.....	Auburn, N. Y.....	June 15, 1852.
Mill spindles, steps, and bearings of.....	Theodore S. Minniss.....	Meadville, Crawford co., N. Y.....	June 22, 1852.
Mill-stone dress.....	Wilson Ager.....	Rohersburg, Columbia co., Pa.....	June 23, 1852.
Mill-stones.....	Thomas Barnett.....	Beverly, York co., England.....	Oct. 12, 1852; in Eng- land Jan. 8, 1852.
Mill spindles, hanging steps of.....	Gideon Hotchkiss.....	Windor, New York.....	June 29, 1852.
Mills, portable grain.....	Charles Leavitt.....	Quincy, Ill.....	July 6, 1852.
Mills, sifter.....	Jarvis Case.....	Selma, Clarke co., Ohio.....	Aug. 10, 1852.
Mills, grinding.....	Oldin Nichols.....	Lowell, Mass.....	Oct. 12, 1852.
Motion, method of converting reciprocating ro- tary into reciprocating rectilinear.	Alfred Carson.....	New York, N. Y.....	July 20, 1852.
Motion, method of converting reciprocating into rotary.	Charles Howard.....	Alton, Madison co., Ill.....	Aug. 10, 1852.
Ores, machines for stamping.....	William Ball.....	Chicopee, Hampden co., Mass.....	Mar. 23, 1852.
Ores, mill for grinding.....	William Ball.....	Chicopee, Hampden co., Mass.....	Mar. 30, 1852.
Packers, flour.....	Nathan Kimmian.....	Lewiston, Niagara co., N. Y.....	Mar. 23, 1852.
Picks, stone.....	Joseph U. Houston.....	Conway, Franklin co., Mass.....	Dec. 14, 1852.
Pulleys, banding.....	Robert W. Parker.....	Roxbury, Mass.....	Feb. 17, 1852.
Smit machines.....	Thomas H. McCray.....	Madisonville, Monroe co., Tend.....	Mar. 23, 1852.
Smit machines.....	Daniel Shaw.....	Cheshire, Gallia co., Ohio.....	April 6, 1852.
Smit machines.....	Charles and James Keeler.....	Union, Broome co., N. Y.....	Sept. 14, 1852.

June 1, 1852.
April 27, 1852.

East Smithfield, Pa.
Troy, N. Y.

G. S. Peck.
John M. Earls.

Smut machine.
Smut machinery.

CLASS XIV.—*Lumber, including machines and tools, for preparing and manufacturing, such as sawing, planing, mortising, shingle and staves, carpenters' and coopers' implements.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bits, expanding.	Charles L. Barnes.	New York, N. Y.	Nov. 16, 1852.
Boring hubs for boxes, apparatus for.	Henry Sidle.	Dillsburg, York co., Pa.	Feb. 24, 1852.
Carving machines.	Charles E. Bacon.	Buffalo, Erie co., N. Y.	Sept. 21, 1852.
Casks, machinery for making.	James Hamilton.	New York, N. Y.	April 13, 1852; in England Sept. 28, 1850.
Grindstone, self-sharpening.	Jesse Pannabecker.	Elizabeth township, Lancaster co., Pa.	Jan. 20, 1852.
Lath machine.	Henry C. Smith.	Cleveland, Ohio	Sept. 28, 1852.
Mortising machines.	John B. Chambers.	Pittsburg, Pa.	May 25, 1852.
Mortising machines.	William C. Shaw.	Madison, Jefferson co., Ia.	July 27, 1852.
Mortising machines.	Joseph Guild.	Cincinnati, Ohio	Nov. 30, 1852.
Planer, bevelling.	Harrison W. Lewis.	Bath, Steuben co., Ohio.	Jan. 13, 1852.
Planing, cutter heads for.	Jas. M. Patton and Wm. F. Fergus.	Philadelphia, Pa.	July 6, 1852.
Plane irons, double.	Fordyce Beals.	Pittsfield, Berkshire co., Mass.	Mar. 16, 1852.
Planes, hand.	Birdsill Holley.	Seneca Falls, N. Y.	July 6, 1852.
Planing machines, feed apparatus for.	Joel Whitney.	Winchester, Middlesex co., Mass.	April 13, 1852.
Planing machines, feeders for.	John Cumberland.	Mobile, Ala.	Feb. 3, 1852.
Planing machines.	G. W. Tolhurst.	Cleveland, Ohio.	Jan. 20, 1852.
Planing machines.	Daniel Stearns.	Rome, Oneida co., N. Y.	Mar. 16, 1852.
Planing machines.	John Howarth.	Salen, Essex co., Mass.	Mar. 23, 1852.
Planing machines.	Nicholas G. Norcross.	Lowell, Mass.	June 22, 1852.
Planing machines.	William Watson.	Chicago, Ill.	July 6, 1852.
Planing machines.	Aretus A. Wilder.	Detroit, Mich.	Dec. 21, 1852; antedated July 17, 1852.
Saw-mills.	Oliver B. Judd.	Rockton, Herkimer co., N. Y.	Feb. 24, 1852.
Saw-mills.	William C. Bronson.	Erwin, Steuben co., N. Y.	April 6, 1852.
Saw-mills.	Hazard Knowles.	New York, N. Y.	Sept. 28, 1852.
Sawing, mills for curvilinear.	James Hamilton.	New York, N. Y.	April 13, 1852; in England June 1, 1848, to Thomas H. Barber.

IV.—*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Saws in saw-mills, straining.....	Edmund Booth.....	Philadelphia, Pa.....	May 18, 1852.
Saw-sets.....	Asahel G. Bacheider.....	Lowell, Mass.....	May 18, 1852.
Saw-set.....	A. Bradway and E. Valentine.....	Monson, Hampden co., Mass.....	Aug. 31, 1852.
Shingle machines.....	William Stoddard.....	Lowell, Mass.....	Dec. 7, 1852.
Shingle machines.....	Luther B. Parker.....	Pine township, Crawford co., Pa.....	Jan. 27, 1852.
Shingle machines.....	Robert L. Noblet.....	Haverford, Pa.....	July 13, 1852.
Shingle machines.....	Furman Hand, jr.....	Chicago, Ill.....	July 13, 1852.
Shingles, machines for jointing.....	William Stoddard.....	Lowell, Middlesex, Mass.....	Mar. 23, 1852.
Shingles, machines for jointing.....	Abel Bradway.....	Monson, Hampden co., Mass.....	July 20, 1852.
Screw blanks, rivets, &c., machinery for shaving the heads of.....	John Crum.....	Ramapo, Rockland co., N. Y.....	Mar. 30, 1852.
Staves, machines for jointing.....	Dennison Woodcock.....	Independence Centre, N. Y.....	May 25, 1852.
Staves, machines for jointing.....	David Rood and E. Jenny, assignors to E. Jeny.....	Boston, Mass.; Middleborough, Mass.....	June 15, 1852.
Tonguing boards, machines for.....	R. H. Edgcomb, assignor of his interest to R. Crosby, and R. Crosby, assignor to Ransom Crosby, jr.....	New York, N. Y.....	April 13, 1852.
Tonguing and grooving apparatus.....	Phineas Emmons.....	New York, N. Y.....	Dec. 7, 1852.
Tonguing boards, machines for.....	Samuel Albro.....	White Hall, N. Y.....	July 13, 1852.
Turning engines.....	James S. Brown.....	Pawtucket, Mass.....	July 6, 1852.
Turning prisms, &c.....	Allen Sherwood and Avery Babbett.....	Auburn, N. Y.....	Jan. 13, 1852.
Turning and polishing machines for.....	Benjamin J. Taymon.....	Philadelphia, Pa.....	June 1, 1852.
Window-blind machinery.....	Daniel H. Thompson.....	Springfield, Mass.....	May 4, 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Brick kilns.....	William Linton.....	Baltimore, Md.....	Jan. 20, 1852.
Brick kilns.....	Richard E. Schroeder.....	Rochester, N. Y.....	Sept. 28, 1852.
Brick machines.....	S. L. Speisegger.....	Savannah, Georgia.....	Mar. 2, 1852.
Brick machines.....	Jesse Samuels.....	Allentown, Lehigh co., Pa.....	April 26, 1852.
Brick machines.....	R. A. Ver Valen.....	Haverstraw, N. Y.....	June 29, 1852.
Brick machines.....	Arad Woodworth, 3d, and Samuel Mower.....	Boston, Mass.....	Aug. 31, 1852; in England Jan. 24, 1852.
Brick machines.....	H. H. Strawbridge and Daniel Tyson.....	New Orleans, La.; Covington, La.....	Nov. 9, 1852.
Clay, mixing, and mashing vegetables, mill for.....	Clark Alvord.....	Geddis, Onondaga co., N. Y.....	Aug. 31, 1852.
Crucibles and other articles of earthenware, mode of forming.....	John Akrill.....	Williamsburg, Kings co., N. Y.....	Oct. 26, 1852.
Drilling stone, machines for.....	Henry Goulding.....	Boston, Mass.....	Jan. 20, 1852.
Glass, mode of frosing.....	John Levy and Charles Jones.....	New York, N. Y.....	Dec. 7, 1852.
Glass, plate and window, manufacture of.....	Terence Clark.....	Pittsburg, Pa.....	June 8, 1852.
Kilns for burning pottery.....	George R. Booth.....	Hanley, England.....	Aug. 31, 1852; in England June 15, 1843.
Marble, imitation of, preparing stone in. (See Stone.)			
Mortar, mixing.....	Jesse Peck.....	Buffalo, N. Y.....	June 29, 1852.
Stone-cutting machines.....	John W. Cochran.....	Williamsburg, Kings co., N. Y.....	April 6, 1852.
Stone-dressing machines.....	S. W. & R. M. Draper.....	Roxborough, Mass.....	May 23, 1852.
Stone drilling, machines for.....	Lemuel P. Jenks, assignor to Joseph W. Page, assignor to George Arthur Gardner.....	Boston, Mass.....	Nov. 2, 1852.
Stone drilling, machines for.....	Joseph J. Couch.....	Philadelphia, Pa.....	Nov. 23, 1852.
Stone and earthenware, manufacture of.....	Jacob and Freeman Wise.....	Fredericktown, Washington county, Pa.....	Nov. 30, 1852.
Stone imitation.....	Charles Iles, assignor to E. H. Ashcroft, assignor to E. H. Ashcroft and George W. Savage.....	Birmingham, England; Boston, Mass.; New York, N. Y.....	June 15, 1852; in England April 26, 1849.
Stone, machines for dressing.....	Albert Eames, assignor to Charles T. Shelton.....	Springfield, Mass.....	Jan. 13, 1852.
Stone, machines for dressing.....	Robert Eastman, assignor to Seth Eastman.....	Concord, N. H.; Washington, D. C.....	July 20, 1852.

IV.—*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Stone, machines for drilling.....	Henry W. Catlin, administrator of Alexander Catlin.	Burlington, Chittenden co., Vt.....	Aug. 10, 1852.
Stone, machines for rubbing.....	Pleasant E. Royse.....	New Albany, Indiana.....	July 20, 1852.
Stone, machines for rubbing.....	P. E. Royse and Ira Reynolds.....	New Albany, Ia.; Republic, Ohio.....	July 6, 1852.
Stone in imitation of marble, preparing.....	Hiram Tucker.....	Cambridgeport, Middlesex co., Mass..	Sept. 7, 1852.
Stone pick. (See Class XIII, Picks, stone.)	Albert Eames.....	Springfield, Mass.....	July 27, 1852.

CLASS XVI.—*Leather, including tanning and dressing, manufacture of boots, shoes, saddlery, harness, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Boot crimps.....	Laman Barrett.....	Gainesville, Wyoming co., N. Y.....	Oct. 26, 1852.
Boot heels, revolving.....	Thomas Walker, assignor to B. B. Thayer, assignor to W. W. Church- ill and Jos. Baxter.	Birmingham, England; Boston, Mass.; Quincy, Mass.	June 29, 1852; in Eng- land July 18, 1849.
Boot jacks.....	Sardis Thompson.....	Hartsville, Berkshire co., Mass.....	April 6, 1852.
Boot soles, tools for cutting pegs out of.....	D. D. Allen.....	Adams, Berkshire co., Mass.....	Oct. 19, 1852.
Boot trees.....	David Sadler.....	McWilliamstown, Chester co., Pa.....	Nov. 23, 1852.
Collars, horse.....	Henry B. Latham.....	Huntingdon, Suffolk co., N. Y.....	April 6, 1852.
Collars, horse.....	J. H. Hall and John Lourey.....	Wheeling, Va.....	Sept. 21, 1852.
Curriers' beam and knife.....	James D. Willoughby.....	Shippensburg, Cumberland co., Pa.....	Aug. 17, 1852.
Gauges, leather.....	Lewis W. Beecher.....	Avon, New York.....	May 4, 1852.
Hame-tugs.....	R. B. Whipple.....	Cleveland, Ohio.....	April 20, 1852.
Harness, cruppers for.....	John J. Flack.....	Joliet, Will co., Ill.....	July 20, 1852.
Harness, fastenings for.....	Thomas Henderson.....	Black Horse, Harford co., Md.....	July 27, 1852.
Harness from horses, detaching.....	George Yellott.....	Bel Air, Maryland.....	June 15, 1852.
Harness saddle trees.....	Thomas Mardock and Wm. C. Keller..	Cincinnati, Ohio.....	Oct. 12, 1852.
Last-holder, revolving.....	Henry G. De Witt.....	Napanock, N. Y.....	June 29, 1852.

Lasting boots, instruments for.....	Hezekiah Conant.....	Worcester, Mass.....	Aug. 24, 1852.
Lasting boots, instruments for.....	Benjamin Livermore.....	Hartland, Windsor co., Vt.....	Aug. 24, 1852.
Leather, machines for polishing.....	John M. Poole, assignor to J. Passey and James Scott.....	Wilmington, Del.....	Sept. 28, 1852.
Mail bags, air-tight.....	Charles A. Robbins and Harvey Allen.....	Iowa City, Johnson co., Iowa; Allen's Grove, Walworth co., Wisconsin.....	Sept. 7, 1852.
Nails, instrument for driving, in difficult places.....	Seth P. Carpenter.....	Milford, Worcester co., Mass.....	July 13, 1852.
Planes, edge, for shoemakers.....	Nicholas Bucher.....	Weedport, Cayuga co., N. Y.....	Nov. 2, 1852.
Saddles.....	William S. Kennedy.....	Philadelphia, Pa.....	June 15, 1852.
Saddles.....	Thomas Marlock.....	Cincinnati, Ohio.....	Nov. 9, 1852.
Shoes and gaiter boots.....	Joseph Brackett.....	Swampscot, Essex co., Mass.....	Sept. 28, 1852.
Tanning.....	A. K. Eaton.....	Rochester, N. Y.....	Aug. 10, 1852.
Tanning.....	David Kennedy.....	Reading, Berks co., Pa.....	Nov. 16, 1852.

CLASS XVII.—Household furniture, machines and implements for domestic purposes, including washing machines, bread and cracker machines, feather dressing, &c.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Bedstead fastenings.....	William Shaw.....	Clarion, Clarion co., Pa.....	Mar. 30, 1852.
Bedstead fastenings.....	A. S. Newhouse.....	McBeen, Ga.....	June 15, 1852.
Bedstead fastenings.....	Jasper Johnson.....	Geneseo, N. Y.....	June 27, 1852.
Bedstead fastenings.....	Isaac A. Sergeant.....	Hamilton, Ohio.....	July 13, 1852.
Bedstead fastenings.....	William Shaw.....	Clarion, Clarion co., Pa.....	Aug. 17, 1852.
Bedsteads.....	Daniel W. Smead.....	Peru, La Salle co., Ill.....	Oct. 19, 1852.
Bedsteads, machines for cutting screws on rails and posts of.....	J. Parsons Owen.....	Norwalk, Huron co., Ohio.....	Mar. 16, 1852.
Bedsteads, portable cot.....	Wm. C. Betts.....	Brooklyn, N. Y.....	May 11, 1852.
Bedstead, sofa.....	John T. Hammit.....	Philadelphia, Pa.....	Mar. 16, 1852.
Bedsteads, sofa.....	Alfred Walker.....	New Haven, Conn.....	June 29, 1852.
Bed for invalids.....	S. D. Hopkins.....	Staunton, Augusta co., Va.....	Aug. 24, 1852.
Brooms.....	Cyrus T. Moore, assignor to F. S. Noyes.....	Concord, N. H.....	July 27, 1852.
Brushes, shoe.....	John Jay Adams.....	Boston, Mass.....	Feb. 10, 1852.
Brushes.....	Freeman Murrow.....	Williamsburg, Kings co., N. Y.....	April 27, 1852.
Brushes, manufacture of.....	Abbot R. Davis.....	East Cambridge, Mass.....	May 11, 1852.

IV.—*Classified list of patents issued—Continued.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Butter from firkins, implement for cutting.....	Nathaniel Woodbury.....	Salem, Mass.....	May 11, 1852.
Chairs.....	George O. Donnell.....	New Lebanon, Columbia co., N. Y.....	Mar. 2, 1852.
Cheese, machines for cutting.....	Walter K. Foster.....	Bangor, Me.....	Aug. 24, 1852.
Clothes, machines for wringing.....	Joseph P. Martin.....	Philadelphia, Pa.....	Oct. 5, 1852.
Clothes pins.....	Saml. Aldrick.....	Springfield, Windsor co., Vt.....	Sept. 14, 1852.
Cracker machines.....	John McCollum.....	New York, N. Y.....	Mar. 23, 1852.
Fans, automatic.....	Seth E. Winslow.....	Kensington, Philadelphia co., Pa.....	Nov. 9, 1852.
Irons, flat, steam.....	Caleb C. Walworth.....	Boston, Mass.....	Dec. 21, 1852.
Irons, smoothing.....	N. Talaferro and Wm. D. Cummings.	Augusta, Bracken co., Ky.; Murphysville, Mason co., Ky.....	Mar. 30, 1852.
Irons, smoothing.....	Federal C. Adams.....	Aberdeen, Brown co., Ohio.....	Sept. 7, 1852.
Knives and forks, machine for scouring.....	Christopher Aumock.....	Columbus, Franklin co., Ohio.....	Jan. 13, 1852.
Mattresses.....	Thos. G. Clinton.....	Cincinnati, Ohio.....	April 20, 1852.
Mattresses, spring.....	John Waters.....	Southwark, Philadelphia co., Pa.....	Jan. 20, 1852.
Meat cutters.....	William Burns.....	Rome, Ohio.....	May 11, 1852.
Meat cutters.....	Joseph Potts.....	Yocumtown, Pa.....	June 15, 1852.
Potato washers.....	Alonzo Bentley.....	Honesdale, Wayne co., Pa.....	May 4, 1852.
Refrigerators.....	Andrew Maish.....	Cincinnati, Ohio.....	April 20, 1852.
Refrigerators of wort.....	Adolph Hammer.....	Philadelphia, Pa.....	Sept. 7, 1852.
Sausage stuffers.....	Thos. W. Bailey.....	Lewistown, Mifflin co., Pa.....	Mar. 30, 1852.
Speaking tubes.....	Thos. Woolcocks and Wm. Ostrander.	New York, N. Y.....	May 4, 1852.
Spoons, forks, &c., machinery for making. (See Class II.)			
Tables.....	Timothy H. Taylor.....	Payetteville, N. Y.....	May 11, 1852.
Wardrobes, portable.....	Seth L. Hobart.....	Hingham, Plymouth co., Mass.....	Sept. 21, 1852.
Washboards.....	Lester Butler.....	Kenosha, Kenosha co., Wis.....	Aug. 31, 1852.
Washing machines.....	John McLaughlin.....	Goshen, Clermont co., Ohio.....	Jan. 20, 1852.
Washing machines.....	Christopher Hollingsworth.....	Liberty, Ind.....	May 4, 1852.
Washing machines.....	Jarvis T. Mudge.....	Washington, D. C.....	Aug. 31, 1852.
Washing machines, or other purposes, connecting joints for.	S. S. Egbert and S. W. Green.....	Willoughby, Lake co., Ohio.....	Sept. 14, 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Books, machines for paging	Stephen E. Parrish, assignor to Edwin B. Clayton & Sons.	New York, N. Y.	Mar. 23, 1852.
Carving machines. (See Class XIV.)			
Copying manuscript.....	John Jones.....	Clyde, N. Y.	June 1, 1852.
Crayon rubber.....	Danl. F. Pond.....	New Haven, Conn.....	Sept. 21, 1852.
Cutting paper, machine for.....	James E. Mallory.....	New York, N. Y.	Sept. 21, 1852.
Cutting paper.....	Jno. P. Farnum, assignor to Jno. P. Farnum, J. Jenkins, and C. B. Clark.	Andover, Mass.....	Dec. 28, 1852.
Daguerreotyping.....	William Yarnell.....	Newark, Licking co., Ohio.....	Dec. 28, 1852.
Daguerreotypes, gilding.....	Charles L'Homdieu.....	Charleston, S. C.....	Oct. 26, 1852.
Daguerreotype pictures.....	Henry E. Insley.....	New York, N. Y.	Jan. 6, 1852.
Daguerreotype plates, polishing.....	Townsend Duryea.....	Williamsburg, N. Y.	June 15, 1852.
Drawing, perspective, apparatus for.....	Prof. Adolphus Richter.....	New York, N. Y.	Nov. 16, 1852.
Engraving surfaces.....	Isaac Taylor.....	Stanford Rivers, Essex co., England.....	June 1, 1852; in England Feb. 21, 1849.
Glass, &c., ornamental painting on.....	Jno. W. Bowers.....	Brookline, Norfolk co., Mass.....	Jan. 13, 1852.
Guitars, &c., tuning pegs for.....	James Ashborn.....	Wolcottville, Litchfield, Conn.....	Sept. 22, 1852.
Label cards.....	James Sharp.....	Roxbury, Mass.....	June 15, 1852.
Melodeons.....	A. L. Swan.....	Cherry Valley, Otsego co., N. Y.....	Mar. 9, 1852.
Organs.....	Albert and George Gemunder.....	Springfield, Mass.....	June 15, 1852.
Pens, gold.....	Adam Wm. Rapp.....	Philadelphia, Pa.....	Jan. 6, 1852.
Pen-holder, fountain.....	Charles Cleveland.....	Middlebury, Vt.....	June 1, 1852.
Pen and pencil cases.....	John H. Rauch.....	New York, N. Y.	Jan. 6, 1852.
Piano forte action.....	Geo. Brown, assignor to G. Brown and J. Munro.	Boston, Mass.....	Jan. 27, 1852.
Piano forte action.....	George Howe.....	Boston, Mass.....	Sept. 28, 1852.
Piano fortes.....	Wm. Compton.....	New York, N. Y.	June 15, 1852.
Piano fortes.....	James and John McDonald.....	New York, N. Y.	Oct. 5, 1852.
Piano fortes, organs, &c., keys of.....	Wm. F. Furgang.....	Albany, N. Y.	April 20, 1852.
Piano fortes, organs, &c., sounding board of.....	A. Speer and E. Marx.....	Aquachanock, Passaic co., N. J.....	Sept. 28, 1852.
Piano fortes, upright.....	R. E. Letton.....	Quincy, Adams co., Ill.....	Oct. 5, 1852.
Printing floor-cloths, machines for.....	Simeon Savage.....	Lowell, Mass.....	Mar. 2, 1852.
Printing oil-cloths, blocks for.....	James Jenkins.....	Elizabethtown, N. J.....	May 11, 1852.

IV.—*Classified list of patents issued*—Continued.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Printing press.	Geo. P. Gordon.	New York, N. Y.	Aug. 31, 1852.
Printing presses.	Joel G. Northrup.	Syracuse, Onondaga co., N. Y.	Nov. 16, 1852.
Printing presses.	Charles W. Hawkes.	Boston, Mass.	Sept. 14, 1852.
Printing presses.	John G. Nicolay.	Pittsfield, Pike co., Ill.	Oct. 5, 1852.
Printing presses.	Charles Foster.	Cincinnati, Ohio.	Oct. 19, 1852.
Printing presses.	Lucius T. Guernsey.	Montpelier, Vt.	Oct. 19, 1852.
Printing presses.	Joel Densmore.	Blooming Valley, Crawford co., Pa.	Nov. 9, 1852.
Printing presses.	Stephen P. Ruggles.	Boston, Mass.	Nov. 16, 1852.
Printing presses.	Charles Montague.	Pittsfield, Berkshire co., Mass.	Nov. 23, 1852.
Printing presses.	Martin Buck, Jas. H. Buck, Aaron H. Cragin, and Franklin A. Tenney, assignors to Aaron H. Cragin.	Lebanon, Grafton co., N. H.	Nov. 23, 1852.
Printing presses, hand.	Henry Moeser.	Pittsburg, Pa.	Jan. 20, 1852.
Reed instruments, bellows for.	Isaac T. Packard.	Campello, Plymouth co., Mass.	Sept. 28, 1852.
Stereotype plates, casting.	H. P. Cook.	Albany, N. Y.	Aug. 3, 1852.
Swivel hooks.	A. & Morris Falknau & Moses Pollak.	New York, N. Y.	May 25, 1852.
Swivel, watch chain.	W. B. Carpenter, assignor to W. D. Salisbury and S. Y. D. Arrowsmith.	New York, N. Y.	May 25, 1853.
Type-casting.	Wm. P. Barr, assignor to Geo. Bruce.	Troy, N. Y.	Aug. 10, 1852.
Type, setting, spaces for.	E. C. Harmon.	Chester, Ohio.	Nov. 23, 1852.
Type, wooden, manufacturing.	John McCreary.	Stony Brook, N. Y.	Dec. 7, 1852.
Viols.	Wm. S. Mount.	Stony Brook, N. Y.	June 1, 1852.

CLASS XIX.—*Fire-arms and implements of war, and parts thereof, including the manufacture of shot and gunpowder.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Cannon, friction primers for.....	William Ball.....	Chicopee, Hampden co., Mass.....	Mar. 23, 1852.
Cartridges for breech-loading guns.....	Wm. H. Marston and Fred. Goodell..	New York, N. Y.....	May 18, 1852.
Fire-arms.....	Chas. V. Nickerson.....	Baltimore, Md.....	Jan. 27, 1852.
Fire-arms, breech-loading.....	Rd. S. Lawrence.....	Windsor, Vt.....	Jan. 6, 1852.
Fire-arms, method of priming.....	Christian Sharps.....	Hartford, Conn.....	Oct. 5, 1852; in Eng- land, April 22, 1852.
Fire-arms, revolving breech.....	Henry S. North and C. D. Skinner....	Middletown, Conn.; Haddam, Conn..	June 1, 1852.
Lance, bomb, for killing whales. (See Class XXII.)			

CLASS XX.—*Surgical and medical instruments, including trusses, dental instruments, bathing apparatus, &c.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Baths, portab'e shower.....	Ferdinand Holm.....	Brooklyn, N. Y.....	Feb. 10, 1852.
Blow-pipe for dentists', &c.....	Julius Thompson.....	North Bridgewater, Plymouth co., N. Y.	Sept. 7, 1852.
Club feet, apparatus for the cure of.....	Zimri Hussey, M. D.....	Chillicothe, Ohio.....	Dec. 14, 1852.
Cupping and breast glasses.....	Wm. S. Thomas.....	Norwich, Chenango co., N. Y.....	Mar. 16, 1852.
Fractures, apparatus for treatment of.....	Zimri Hussey.....	Chillicothe, Ross co., Ohio.....	Dec. 14, 1852.
Inhaling powders, instruments for.....	Ira Warren.....	Boston, Mass.....	Mar. 16, 1852.
Legs, artificial.....	B. F. Palmer.....	Philadelphia, Pa.....	Aug. 17, 1852.
Legs, artificial.....	Jonathan Russell.....	Philadelphia, Pa.....	Aug. 17, 1852.
Legs, artificial.....	John S. Drake.....	New York, N. Y.....	Aug. 31, 1852.
Spoons for administering medicines.....	J. C. Taylor.....	West Liberty, Logan co., Ohio.....	Feb. 17, 1852.
Teeth, artificial, manufacturing.....	Wm S. McIlhenny.....	Philadelphia, Pa.....	Mar. 23, 1852.
Trusses.....	Fred. M. Butler.....	New York, N. Y.....	Mar. 30, 1852.
Truss, hernial.....	A. J. Lounsberry.....	Somerville, Fayette co., Tenn.....	Aug. 17, 1852.

IV.—*Classified list of patents issued—Continued.*CLASS XXI.—*Wearing apparel, articles for the toilet, &c., including instruments for manufacturing.*

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Button-backs, machines for forming.....	James C. Cooke	Waterbury, New Haven, Conn.,	July 27, 1852.
Buttons, cord, manufacturing.....	N. Perkins, assignor to Samuel Dow ..	Wauarsing, N. Y.; Westfield, Hamp- den co., Mass.	Aug. 17, 1852.
Buttons, glass.....	Arad W. Welton	Cheshire, Conn.....	Oct. 12, 1852.
Buttons, studs, &c.....	David Rait	New York, N. Y.....	April 6, 1852.
Clasp, belt.....	Albert M. Smith.....	Rochester, N. Y.....	June 2, 1852.
Cloth and other substances, graduated cutters for.	Halsey D. Wolcott.....	Boston, Mass.....	July 27, 1852.
Coat forms.....	Wm. B. Olla.....	Meriden, New Haven co., Conn.....	April 6, 1852.
Coats, block for stretching.....	Samuel M. Perkins.....	Springfield, Bradford co., Pa.....	July 27, 1852.
Fastenings for garments.....	Elbridge G. Belknap	Philadelphia, Pa.....	June 15, 1852.
Hats.....	Benjamin Sherwood.....	New York, N. Y.....	Aug. 10, 1852.
Port-monnaies, manufacture of.....	Benj. S. Siedman	West Meriden, New Haven co., Conn.	Sept. 14, 1852.
Razor strops.....	John Dement	Montpelier, Washington co., Vt.....	Mar. 30, 1852.
Shears.....	J. C. Symmes	West Troy, N. Y.....	Jan. 27, 1852.
Suspender, encircling, for garments.....	Harris H. Tinker.....	New London, Conn.....	Mar. 2, 1852, antedated
Tailors' measures	Wm. T. Wells.....	Shelbyville, Tenn.....	Dec. 3, 1851.
Umbrellas.....	J. V. Tibbets.....	New York, N. Y.....	April 20, 1852.
			May 18, 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.
Awning, shop.....	Wm. H. Bakewell.....	New York, N. Y.....	Mar. 23, 1852.
Bags of paper, machine for making.....	Francis Wölle.....	Bethlehem, Northampton co., Pa.....	Oct. 26, 1852.
Bells, method of ringing.....	Thomas V. Stran.....	New Albany, Ind.....	June 29, 1852.
Blubber, whale, machines for cutting.....	Lydoriann Rickelson, administrator of H. R. Rickelson.	New Bedford, Mass.....	Dec. 14, 1852.
Bottle stopper.....	E. and D. Kinsey.....	Cincinnati, Ohio.....	Nov. 16, 1852.
Boxes, opening, instruments for.....	Geo. C. Tat.....	Worcester, Mass.....	April 13, 1852.
Burglar alarms.....	L. J. Worden and E. H. Space.....	Clinton, Oneida co., N. Y.....	Jan. 27, 1852.
Cigars, machines for making.....	William Dawson.....	Huntington, Conn.....	June 15, 1852.
Fire escape ladders.....	John C. F. Salomon.....	Georgetown, D. C.....	June 1, 1852.
Fish, spinning bait for catching.....	Julio T. Buel.....	Whitehall, Washington co., N. Y.....	April 6, 1852.
Lance, bomb, for killing whales.....	Christopher C. Brand.....	Ledyard, New London co., Conn.....	June 22, 1852.
Rattan, machines for splitting.....	Joseph Sawyer.....	Royalston, Worcester co., Mass.....	Jan. 20, 1852.
Rat trap.....	James Sheward.....	Somerset, Perry co., Ohio.....	Mar. 30, 1852.
Rat trap.....	John J. Vedder.....	Schenectady, N. Y.....	June 8, 1852.
Sand-paper holder.....	A. H. Copeland.....	West Bridgewater, Mass.....	Jan. 27, 1852.
Skates.....	Nath'l C. Sanford.....	Meriden, Conn.....	June 29, 1852.
Swings.....	Edward Maynard.....	New York, N. Y.....	May 18, 1852.
Tally board.....	Francis N. Clark.....	Chicago, Cook co., Ill.....	Aug. 13, 1852.
Tobacco, machines for pressing.....	Ephraim Parker, assignor to A. L. Parker.	Rock Island city, Ill.....	April 27, 1852.
Water closets.....	Wm. S. Carr.....	New York, N. Y.....	Dec. 21, 1852.

IV.—*Classified list of patents issued—Continued.*

EXTENSIONS FOR 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of original patent.	Term of extension.
Graft of sail vessels, mode of constructing the.	John Brown.....	Stonington, Conn.....	Dec. 31, 1838	Dec. 11, 1852.
Planing plank boards and clap-boards, machine for.	Barnabas Langdon.....	Buffalo, N. Y.....	Jan. 9, 1838	7 years from Jan. 9, 1852.
Shingles, machine for shaving.....	Barnabas Langdon.....	Buffalo, N. Y.....	Jan. 9, 1838	7 years from Jan. 9, 1852.

ADDITIONAL IMPROVEMENTS GRANTED DURING THE YEAR 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Improvements added.
Heddles, weavers'.....	Jacob Sennett.....	Philadelphia, Pa.....	Jan. 13, 1852	July 20, 1852.
Horse-shoe-nail machine.....	Marshall Burnett.....	Boston, Mass.....	April 1, 1851	April 13, 1852.
Hot-air furnaces.....	Geo. S. G. Spence.....	Boston, Mass.....	Aug. 17, 1852	Dec. 28, 1852.
Washing maize, process of.....	Frederick Seitz.....	Easton, Pa.....	Jan. 20, 1852	July 13, 1852.

DISCLAIMERS ENTERED DURING THE YEAR 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Disclaimers entered.
Dyeing, apparatus for ...	Edwd. Brierty, assignor to Jno. Holt..	Lowell, Mass.....	Dec. 11, 1849	Mar. 6, 1852.
Violins.....	Wm. B. Tilton.....	Late of Carrollton, Pickens co., Ala.....	Sept. 2, 1851	Mar. 5, 1852.

Inventions or discoveries.	Patentees.	Residence.	Date of patent.	Reissued.
Batting of cotton or other fibrous material.	Hamilton B. and Hiram T. Lawton....	Troy, N. Y.	Mar. 13, 1849....	June 22, 1852
Bedsteads.	Nathaniel Colver.	South Abington, Mass.	April 24, 1849....	July 6, 1852
Boilers, steam, and apparatus to be used on board of steamboats to prevent the explosion of boilers.	Cadwallader Evans.	Pittsburg, Pa.	April 15, 1839....	Nov. 23, 1852
Brakes, self-detaching.	John Lahaye.	Reading, Berks co., Pa.	April 10, 1847....	April 13, 1852
Bullets, &c., manufacture of.	George W. Campbell.	New York, N. Y.	Nov. 20, 1847....	Aug. 3, 1852
Freezers, cream.	E. C. Seaman.	Philadelphia, Pa.	April 3, 1848....	Nov. 30, 1852
Furnaces for smelting iron ore, construction of. .	Augustus Roth.	Philadelphia, Pa.	Oct. 31, 1839....	April 6, 1852
Lampblack.	J. G. Mini.	Philadelphia, Pa.	Nov. 30, 1844....	Aug. 24, 1852
Lock, powder proof.	Wm. Hall.	Boston, Mass.	Aug. 1, 1848....	Mar. 30, 1852
Paper-cutting and trimming-books, machine for. .	Frederick J. Austin.	New York, N. Y.	Dec. 16, 1840....	June 22, 1852
Planing machines.	Alexander Smith.	West Farms, N. Y.	June 18, 1850....	May 11, 1852
Planter, seed, seedling apparatus of a.	Chas. A. Spring and Peter Boon.	Kensington, Pa.	July 30, 1850....	Jan. 13, 1852
Planing, tonguing, and grooving, machines for. .	Lewis Moore.	Bart, Lancaster co., Pa.	July 2, 1850....	Oct. 12, 1852
	Joseph Powell, Nelson Barlow, and Edward Holden, assignors to Robert G. Eunsou.	St. Louis, Mo.; New York, N. Y.	Feb. 27, 1847....	Mar. 9, 1852
Planter, gearing of a seed.	Marshall J. Hunt.	Rising Sun, Cecil co., Md..	June 3, 1851....	Mar. 30, 1852
Stoves, machine for dressing.	Isaac Edgcomb.	New Haven, Conn.	May 1, 1847....	Mar. 9, 1852
Tonguing boards, machines for.	H. D. Edgcomb, assignor to R. Cros- by, and R. Crosby, assignor to R. Crosby, jr.	New York, N. Y.	April 13, 1852....	July 13, 1852
Washing apparatus.	James T. King.	Baltimore, Md.	Oct. 21, 1851....	April 13, 1852
Welding cast iron to malleable iron or steel.	Mark Fisher and Wm. Martin, jr.	Newport, Me.	Oct. 16, 1847....	Nov. 30, 1852

IV.—*Classified list of patents issued*—Continued.

DESIGNS.

Designs.	Patentees.	Residence.	Date of patent.
Camera stand.....	W. A. Allen.....	New York, N. Y.....	Sept. 21, 1852.
Comb, hair.....	James Shields.....	Fishkill, Dutchess co., N. Y.....	Feb. 3, 1852.
Comb, ladies' hair.....	William Redheffer.....	Spring Garden, Pa.....	May 25, 1852.
Comb, ladies' hair.....	James Blackman & Chas. Skidmore.....	Newtown, Fairfield co., Conn.....	Feb. 17, 1852.
Cradle, cast-iron.....	P. M. Hutton.....	Troy, N. Y.....	Oct. 26, 1852.
Curl, pump.....	John W. Wheeler and O. B. Latham.....	Seneca Falls, N. Y.....	Nov. 2, 1852.
Fence, wire.....	Francis Kilburn.....	Lancaster, Pa.....	Sept. 21, 1852.
Floor oil-cloths.....	Jas. Patterson, assignor to Jas. Albro.....	Elizabethtown, Essex co., N. J.....	Jan. 13, 1852.
Forks, spoons, &c.....	Robert Taylor and R. D. Laurie.....	Philadelphia, Pa.....	Oct. 19, 1852.
Furnace, portable.....	Jas. G. Abbott & Archilus Lawrence.....	Philadelphia, Pa.....	April 27, 1852.
Grate frames.....	Robert E. Dietz.....	New York, N. Y.....	Dec. 28, 1852.
Grate frames.....	James L. Jackson.....	New York, N. Y.....	Feb. 3, 1852.
Grate frames.....	James L. Jackson.....	New York, N. Y.....	Oct. 12, 1852.
Grate frame.....	James L. Jackson.....	New York, N. Y.....	Feb. 3, 1852.
Grate frame and fender.....	James L. Jackson.....	New York, N. Y.....	Aug. 10, 1852.
Grate frame, summer piece and fender.....	James L. Jackson.....	New York, N. Y.....	Aug. 10, 1852.
Grate frame and summer piece.....	James L. Jackson.....	New York, N. Y.....	Aug. 10, 1852.
Grate frame and summer piece.....	James L. Jackson.....	New York, N. Y.....	Feb. 3, 1852.
Grate frame and summer piece.....	Adam Hampton.....	New York, N. Y.....	Feb. 17, 1852.
Grate, parlor.....	Joseph Pratt, assignor to Bowers, Pratt, & Co.....	Boston, Mass.....	Oct. 5, 1852.
Grate, portable.....	David Thompson, assignor to New Market Iron Foundry.....	Boston, Mass.....	Nov. 16, 1852.
Grate, portable.....	Apollon Richmond, assignor to A. C. Barstow & Co.....	Providence, R. I.....	June 8, 1852.
Hearth plate.....	Wager, Richmond, & Smith.....	Troy, N. Y.....	July 13, 1852.
Mantle, grate frame, and summer piece.....	James L. Jackson.....	New York, N. Y.....	Dec. 21, 1852.
Medallion of Daniel Webster.....	Peter Stephenson.....	Boston, Mass.....	Feb. 3, 1852.
Medallion of General Scott.....	Peter Stephenson.....	Boston, Mass.....	July 27, 1852.
Medallion of Franklin Pierce.....	Peter Stephenson.....	Boston, Mass.....	Sept. 7, 1852.
Pedestal and column.....	Thos. Law, assignor to Levi Chapman.....	New York, N. Y.....	Sept. 7, 1852.
			Nov. 9, 1852.

Railing, iron.....	Nicholas J. Horton	Cincinnati, Ohio.....	Dec. 14, 1852.
Range, cooking.....	Benj Wardwell & Ephraim E. Barstow.	Fall River, Mass., and Providence, R. I.	Oct. 19, 1852.
Spittoon.....	W. L. & S. W. Pearshall.....	New York, N. Y.....	Dec. 21, 1852.
Spoons.....	Hy. Hebbard and John Polhamus.....	New York, N. Y.....	Jan. 6, 1852.
Stand, hat and umbrella.....	Charles Zeuner, assignor to M. Greenwood & Co.	Cincinnati, Ohio.....	July 13, 1852.
Stove.....	Jacob Beasley & E. Delancy, assignors to Wm. P. Cresson.	Philadelphia, Pa.....	Aug. 10, 1852.
Stove.....	Samuel H. Sailor, assignor to J. G. Abbott & A. Lawrence.	Philadelphia, Pa.....	Nov. 9, 1852.
Stoves.....	Jas. G. Abbott and Archilus Lawrence..	Philadelphia, Pa.....	Jan. 6, 1852; antedated Dec. 11, 1851.
Stoves.....	Jas. G. Abbott and Archilus Lawrence..	Philadelphia, Pa.....	Jan. 6, 1852; antedated Dec. 11, 1851.
Stoves.....	Sanford Burnum.....	Philadelphia, Pa.....	Dec. 11, 1851.
Stoves.....	J. Harvey Conklin, assignor to W. D. & F. Vredenburg.	Waterford, Saratoga co., N. Y.....	Jan. 6, 1852; antedated Dec. 11, 1851.
Stoves.....	William Savery.....	Peekskill, Sing Sing, Westchester co., N. Y.	Jan. 6, 1852.
Stoves.....	James Wager, David Pratt, & Volney Richmond.	New York, N. Y.....	Jan. 6, 1852.
Stoves.....	Conrad Harris & Paul Wm. Zoiner....	Troy, N. Y.....	Jan. 13, 1852.
Stoves.....	James Leifel.....	Cincinnati, Ohio.....	Jan. 13, 1852.
Stove, box.....	Samuel D. Vose.....	Springfield, Clark co., Ohio.....	Feb. 10, 1852.
Stove, box.....	Jas Wager, V. Richmond, & H. Smith	Albany, N. Y.....	Feb. 24, 1852.
Stove, cannon.....	Samuel H. Sailor, assignor to J. G. Abbott & A. Lawrence.	Troy, N. Y.....	June 22, 1852.
Stoves, coal.....	John Burgess, assignor to Geer, Chaffee, and Richmond.	Philadelphia, Pa.....	Dec. 14, 1852.
Stove, coal.....	Samuel D. Vose.....	Troy, N. Y.....	Nov. 9, 1852.
Stove, coal.....	W. L. Sanderson, assignor to R. R. Finch and R. R. Finch, jr.	Troy, N. Y.; Peekskill, Westchester co., N. Y.	Jan. 13, 1852.
Stove, coal.....	Gilbert Knapp and A. H. Neale.....	Albany, N. Y.....	June 22, 1852.
Stoves, cooking.....	Samuel M. Carpenter.....	Honesdale, Wayne co., Pa.....	Dec. 14, 1852.
Stoves, cooking.....	John J. Savage, assignor to A. Morrison and T. M. Tibbitts.	Erie, Pa.....	Mar. 30, 1852.
Stoves, cooking.....	A. J. Gallagher and J. J. Baker.....	Troy, N. Y.....	April 13, 1852.
Stoves, cooking.....	S. H. Sailor, assignor to Norch, Harrison, & Chase.	Philadelphia, Pa.....	April 20, 1852; antedated Jan. 17, 1852.
Stove, cooking.....	Hosea H. Hundly, assignor to David T. Woodrow.	Philadelphia, Pa.....	April 27, 1852.
Stove, cooking.....		Cincinnati, Ohio.....	May 11, 1852.

IV.—*Classified list of patents issued*—Continued.

Designs.	Patentees.	Residence.	Date of patent.
Stove, cooking.....	Apollos Richmond, assignor to A. C. Burdow & Co	Providence, R. I.....	May 11, 1852.
Stoves, cook.....	Thos. H. Herrick, assignor to Lemuel M. Leonard.	Boston, Mass.; Taunton, Mass.....	May 18, 1852.
Stove, cook.....	N. S. Vedder and W. L. Sanderson, assignors to P. J. Clute.	Troy, N. Y.; Schenectady, N. Y.....	May 18, 1852.
Stove, cooking.....	S. W. Gibbs, assignor to North, Harrison, & Chase.	Albany, N. Y.; Philadelphia, Pa.....	June 22, 1852.
Stove, cooking.....	J. H. Conklin, assignor to R. R. Finch, sen. and jr.	Peekskill, N. Y.....	June 29, 1852.
Stove, cooking.....	Wm. F. Pratt and Geo. W. Bosworth	Milford, N. H.....	July 13, 1852.
Stove, cooking.....	Samuel Eberly.....	Mechanicsburg, Cumberland co., Pa.....	Aug. 3, 1852.
Stove, cooking.....	G. Smith, H. Brown, and Julius Holzer, assignors to North, Harrison, & Chase.	Philadelphia, Pa.....	Aug. 3, 1852.
Stove, cooking.....	Russell Wheeler and Stephen A. Bailey	Utica, N. Y.....	Aug. 3, 1852.
Stove, cooking.....	Jacob Beesley, assignor to Richard Peterson.	Philadelphia, Pa.....	Aug. 10, 1852.
Stove, cooking.....	Frederick Schultz, assignor to Wm. P. Cresson.	Philadelphia, Pa.....	Aug. 10, 1852.
Stove, cooking.....	John S. Perry, assignor to Jagger, Treadwell, & Perry.	Albany, N. Y.....	Aug. 17, 1852.
Stove, cooking.....	John S. Perry, assignor to Jagger, Treadwell, & Perry.	Albany, N. Y.....	Aug. 17, 1852.
Stove, cooking.....	Samuel D. Vose.....	Albany, N. Y.....	Aug. 17, 1852.
Stove, cooking.....	Samuel D. Vose.....	Albany, N. Y.....	Aug. 17, 1852.
Stove, cook.....	Samuel D. Vose.....	Albany, N. Y.....	Aug. 17, 1852.
Stove, cooking.....	N. S. Vedder.....	Albany, N. Y.....	July 13, 1852.
Stove, cooking.....	Orin W. Andrews, assignor to Isaac Backus and John Pitt Barstow.	Sept. 14, 1852; antedated Mar. 14, 1852.	Sept. 14, 1852.
Stove, cooking.....	Charles B. Tuttle.....	Troy, N. Y.....	Sept. 14, 1852.
Stove, cooking.....	Elihu Smith.....	Providence, R. I.; Canterbury, Ct.; Norwich, Ct.	Sept. 14, 1852.
Stove, cooking.....	Jas. Wager, V. Richmond, & H. Smith	Providence, R. I.; Canterbury, Ct.; Anherst, Hillsborough co., N. H.....	Sept. 21, 1852.
Stove, cooking.....		Albany, N. Y.....	Oct. 5, 1852.
Stove, cooking.....		Troy, N. Y.....	Oct. 19, 1852.
Stove, cooking.....			Oct. 26, 1852.

Stove, cook.....	N. S. Vedder.....	Troy, N. Y.....	Nov. 2, 1852.
Stove, cooking.....	Jos. Pratt, assignor to Bowers, Pratt, & Co.	Boston, Mass.....	Nov. 2, 1852.
Stove, cook.....	Ripley & Vedder, assignors to Samuel McClure.	Troy, N. Y.; Rochester, N. Y.....	Dec. 7, 1852.
Stove, cooking.....	S. S. Jewett and F. H. Root.....	Buffalo, N. Y.....	Dec. 21, 1852.
Stove, dining-room.....	Wm. L. Sanderson, assignor to R. R. Finch, sen. and jr.	Troy, N. Y.; Peekskill, N. Y.....	June 22, 1852.
Stove, Franklin.....	Samuel F. Pratt, assignor to Jagger, Treadwell, & Perry.	Boston, Mass.; Albany, N. Y.....	Nov. 30, 1852.
Stove, Franklin.....	Jos. Pratt, assignor to Bowers, Pratt, & Co.	Boston, Mass.....	Nov. 16, 1852.
Stoves, parlor.....	N. S. Vedder and W. L. Sanderson, assignors to Warren, Sweetland, & Little.	Half Moon village, Saratoga co., N. Y., assignees; Troy, N. Y., assignors.	Feb. 24, 1852.
Stove, parlor cook.....	Samuel D. Vose.....	Albany, N. Y.....	June 22, 1852.
Stove, parlor.....	Samuel D. Vose.....	Albany, N. Y.....	June 22, 1852.
Stove, parlor.....	J. D. Green, assignor to Morrison & Tibbitts.	Troy, N. Y.....	July 6, 1852.
Stove, parlor.....	Ezra Ripley, assignor to N. S. Vedder.	Troy, N. Y.....	Aug. 31, 1852.
Stove front, parlor.....	Samuel A. House, assignor to Hiram House.	Mechanicsville, Saratoga co., N. Y.....	Aug. 31, 1852.
Stove, parlor, top and front plates of a.....	Samuel A. House, assignor to Hiram House.	Mechanicsville, Saratoga co., N. Y.....	Aug. 31, 1852.
Stove, parlor.....	C. Harris and P. W. Zoiner.....	Cincinnati, Ohio.....	Sept. 14, 1852.
Stove, parlor.....	Jas. J. Duley, assignor to Johnson, Cox, & Fuller.	Troy, N. Y.....	Sept. 14, 1852.
Stove, parlor.....	N. S. Vedder.....	Troy, N. Y.....	Oct. 12, 1852.
Stove, parlor.....	Samuel H. Sailor, assignor to J. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	Nov. 9, 1852.
Stove, parlor.....	Washington Race, assignor to H. C. Silsby, W. Race, and B. Holley.	Seneca Falls, N. Y.....	Nov. 9, 1852.
Stove, parlor.....	Dutée Arnold.....	Providence, R. I.....	Aug. 17, 1852.
Stove, parlor.....	Dutée Arnold.....	Providence, R. I.....	Nov. 30, 1852.
Stove plates.....	S. S. Jewett and F. H. Root.....	Buffalo, N. Y.....	Dec. 21, 1852.
Stove plates.....	William M. Snow.....	Troy, N. Y.....	Nov. 2, 1852.
Stove plates.....	Samuel H. Sailor, assignor to J. G. Abbott and A. Lawrence.	Philadelphia, Pa.....	Nov. 9, 1852.
Stove plate, parlor.....	Samuel A. House, assignor to Hiram House.	Mechanicsville, Saratoga co., N. Y.....	Aug. 31, 1852.

IV.—*Classified list of patents issued—Continued.*

Designs.	Patentees.	Residence.	Date of patent.
Stove plates, parlor.....	Amos Paul.....	South New Market, Rockingham co., N. H.	July 20, 1852.
Stove, six-plate.....	Samuel F. Pratt, assignor to Jagger, Treadwell, & Perry.	Albany, N. Y.....	Aug. 17, 1852.
Table frame and legs.....	Walton Bryant.....	Boston, Mass.....	Oct. 5, 1852.
Towel stand.....	Nathaniel Waterman.....	Boston, Mass.....	May 25, 1852.
Water-cooler.....	Patrick Malony.....	Cincinnati, Ohio.....	Aug. 3, 1852.
Window blinds.....	Nathan Chapin, assignor to N. Chapin and John F. Driggs.	New York, N. Y.....	Nov. 30, 1852.

ALPHABETICAL LIST OF PATENTS FOR THE YEAR 1852.

No.	Patentees.	Inventions or discoveries.	Class.
431	Abbot, James G., and Archilus Lawrence.	Stoves.....	Design.
432	Abbot, James G., and Archilus Lawrence.	Stoves.....	Design.
434	Abbot, James G., and A. Lawrence, assignees. (See S. H. Sailor, assignor.)	Furnace, portable.....	Design.
	Abbot, James G., and A. Lawrence, assignees. (See S. H. Sailor, assignor.)		
	Abbot, James G., and A. Lawrence, assignees. (See S. H. Sailor, assignor.)		
	Abbot, James G., and A. Lawrence, assignees. (See S. H. Sailor, assignor.)		
9241	Adams, Federal C.	Irons, smoothing.....	XVII.
9145	Adams, Henry W.	Zinc, preparing from the ores.....	IV.
9175	Adams, Henry W.	Gas, illuminating, processes for making.....	IV.
8714	Adams, John Jay.	Brushes, shoe.....	XVII.
9127	Adkins, Orville G.	Engines, fire.....	XI.
9064	Ager, Wilson.	Hulling buckwheat.....	I.
9063	Ager, Wilson.	Mill-stone dress.....	XIII.
9351	Akrill, John.	Crucibles and other articles of earthenware, mode of forming.....	XV.
8993	Akrill, John.	Retorts for chemical furnaces, construction of.....	IV.
9244	Albee, Simeon W.	Chickens, apparatus for feeding.....	I.
	Albro, James. (See Paterson, assignor to Albro.)		
9111	Albro, Samuel.	Tonguing boards, machines for.....	XIV.
8767	Albro, Stephen.	Life-preservers.....	VII.
9257	Aldrick, Samuel.	Clothes pins.....	XVII.
8932	Aiford, William, and John D. Spear.	Safes, iron.....	II.
9340	Allen, D. D.	Boot soles, tools for cutting pegs out of.....	XVI.
503	Allen, W. A.	Camera stand.....	Design.
	Allen & Robbins. (See Robbins, Charles A., and Harvey Allen.)		
9226	Alvord, Clark.	Clay, mixing, and mashing vegetables, mill for.....	XV.
9049	Ames, Nathan, assignor to Walter Bryant.	Square, centre, for finding the centre of a circle.....	VIII.
8963	Andrews, Albert F.	Fuses, machinery for making.....	IX.

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
505	Andrews, Orin W., assignor to Isaac Backus and John Pitt Barstow.	Cooking stove.....	Design.
8468	Andrews, Solomon.....	Punches, drop.....	II.
9267	Andrews, William H. and R. T.....	Lamps, alarm time-piece for lighting.....	V.
9732	Armstrong, Francis..... (See <i>Few & Armstrong</i> .)	Furnaces, construction of grate bars for.....	V.
475	Arnold, Dutce.....	Stove, cooking, the front and side plates of a.....	Design.
487	Arnold, Dutce.....	Stove, parlor.....	Design.
523	Arnold, Dutce.....	Stove, parlor.....	Design.
8715	Arrowsmith, Samuel Y. D.....	Watch-chain swivels.....	VIII.
8946	Ash, William F.....	Drills, rock.....	IX.
9208	Ashborn, James.....	Guitars, &c., tuning pegs for.....	XVIII.
8816	Ashcroft, E. H., and George Savage, assignees of E. H. Ashcroft, assignee of Charles Hles. (See <i>Charles Hles.</i>)	Omnibus step.....	X.
9479	Ashentfelder, Josiah.....	Harvesters, grain, rakes to.....	I.
8646	Aitkins, Jearum.....	Knives and forks, machine for scouring.....	XVII.
218	Aumock, Christopher.....	Paper, cutting, and trimming books, machine for.....	Reissue.
9338	Austin, Frederick J.....	Sewing machines.....	III.
9211	Avery, Otis.....	Bill registers.....	VIII.
8933	Ayres, J. N.....	Saw sets.....	XIV.
	Babbitt, Avery. (See <i>Sherwood & Babbitt</i> .)		
	Bachelder, Asahel G.....		
	Becheider, A. G., and L. F. Thompson, assignors to H. Tanner. (See <i>L. F. Thompson</i> .)		
	Backus, Isaac, and John Pitt Barstow, assignees. (See <i>O. W. Andrews</i> .)		
9269	Bacon, Charles E.....	Carving machines.....	XIV.
9161	Bailey, Charles P.....	Car seats, railroad.....	X.
8834	Bailey, Thomas W.....	Sausage stuffers.....	XVII.
8750	Bailey, Timothy.....	Knitting machines.....	III.
	Batley, Stephen A. (See <i>Wheeler & Bailey</i> .)		
	Baker, George, & J. C. Forrest. (See <i>J. C. Forrest</i> .)		
	Baker, J. J. (See <i>Gallagher & Baker</i> .)		
8369	Baker, William.....	Hinges.....	II.
	Baker, William E., and W. O. Grover. (See <i>W. O. Grover</i> .)		

8917	Bakewell, William H.	XXII.
8900	Baldwin, Matthias W.	VI.
8912	Baldwin, M. W., & David Clark.	VI.
8-19	Ball, E., assignor to J. N. McAlee.	I.
8850	Ball, Thaddeus J., and John Post.	I.
8820	Ball, William.	XXIX.
8518	Bal, William.	XXIII.
8-35	Ball, Will am.	XXIII.
9045	Barclay, Alexander.	II.
8733	Barker, Abel.	XI.
8933	Barker, Samuel.	II.
9065	Barker, Samuel.	VII.
	Barlow and others, assignors. (See Powell, Barlow, & Holden.)	
	Barnard, G. F., and others. (See J. R. St. John.)	
9398	Barnes, Charles L.	XIV.
9313	Barnett, Thomas.	XIII.
8763	Barnhill, William.	VI.
8622	Barnum, N. S., and L. Whitney.	V.
9177	Barr, William P., assignor to George Bruce.	XVIII.
9352	Barrett, Luman.	XVI.
8623	Barry, S. S.	X.
	Barstow, A. C., & Co., assignees. (See Apollos Richmond.)	
	Barstow, A. C., & Co., assignees. (See Apollos Richmond.)	
	Barstow, A. C., & Co., assignees. (See Apollos Richmond.)	
	Barstow, Ephraim R. (See B. Wardwell and E. R. Barstow.)	
9123	Bass, William L.	X.
9046	Bassett, Joel R.	XI.
9498	Bayles, Daniel S.	VII.
8736	Beales, Fordyce.	XIV.
	Beardsley <i>et al.</i> (See Jennings <i>et al.</i>)	
8917	Beecher, Lewis W.	XVI.
485	Beesley, Jacob, and E. Delancy, assignors to William P. Cresson.	Design.
456	Beesley, Jacob, assignor to Richard Peterson.	Design.
9011	Bilknap, Elbridge G.	XXI.
9397	Belknap, Moody, assignor to Moody Belknap and Lyman Kinsley.	II.
8918	Bentley, Alonzo.	XVII.
9293	B-grey, Jacob.	I.
9499	Bertoleti, Mayberry A., L. Kirk, and Andrew M. De Hart.	II.
9227	Best, Christopher G.	V.
8851	Bettleley, Albert.	II.
8934	Betts, William C.	XVII.
	Awings, shop.	
	Valves for steam engines.	
	Boilers, apparatus for heating feed-water of steam.	
	Ploughs.	
	Cultivators.	
	Cannon, friction primers for.	
	Ores, machines for stamping.	
	Ores, mill for grinding.	
	Gold, washing and amalgamating, &c., machine for.	
	Pumps.	
	Blind and shutter fastener.	
	Sail hank.	
	Bits, expanding.	
	Mill stones.	
	Boiler, steam, arrangement of.	
	Ventilating railroad cars.	
	Type, casting.	
	Boot crimps.	
	Hubs, carriage.	
	Car seats.	
	Pumps, valves for.	
	Vessels, yards of, parrel for.	
	Plane irons, double.	
	Gauges, leather.	
	Stove.	
	Stove, cooking.	
	Fastenings for garments.	
	Spike machinery, reciprocating die.	
	Potato washers.	
	Grain separators.	
	Gold, &c., by amalgamation, method of obtaining.	
	Furnace, reveratory.	
	Lock.	
	Bedsteads, portable cot.	

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9363	Bigelow E. B.	Pile fabrics, pile wires, pincers for weaving.	III.
8836	Bishop, Charles	Excavating machines.	IX.
9314	Bishop, Charles	Ploughs, gang.	I.
8621	Bishop, George G.	Felting cloth, machinery for.	III.
446	Bishop & Libbey, assignees. (See Boyd C. Leavitt.)		
	Blackman, James, and Charles Skidmore.		
8901	Blair, John Cust.	Comb, ladies' hair	Design.
8882	Blake, Norman	File-cutting machine.	II.
8650	Blake, Philos.	Augers, submarine.	IX.
9461	Blake, William P.	Linterns.	V.
8964	Blakely, Henry	Safes, &c., iron, lining for.	II.
9162	Blanchard, Cornelius W.	Locks, tumblers of	II.
9212	Blanchard, R. J.	Looms for weaving figured fabrics.	III.
8670	Blasdell, Horatio.	Stoves, cooking.	V.
9129	Blatchly, N.	Grinding quartz, mill for.	XIII.
9429	Bliss, Jeremy W.	Ploughs.	I.
	Blood, Isiah, A. J. Goffee, and R. Thomas, assignees. (See John Orclup.)	Vice, taper, attachment for converting the ordinary into a	II.
8634	Blossom & Cramer. (See Cramer, R. S., and C. C. Blossom.)	Bridges, construction of.	IX.
8954	Bollman, Wendall	Saws in saw mills, straining.	XIV.
9230	Boon, Peter. (See Spring & Boon)	Kilns for burning pottery.	XV.
	Booth, Edmund.		
	Booth, Geo. R.		
	Bostwick, John J., and Elbert White, assignees. (See Marshall & Cook.)		
9163	Bosworth, Geo. W., & Wm. F. Pratt. (See Wm. F. Pratt.)	Gauges, pressure	VIII.
8651	Bourdon, Eugene	Glass, &c., ornamented painting on.	XVIII.
	Bowers, John W.		
	Bowers, Pratt, & Co., assignees. (See Jos. Pratt, assignor.)		
	Bowers, Pratt, & Co., assignees. (See Jos. Pratt, assignor.)		
	Bowers, Pratt, & Co., assignees. (See Jos. Pratt, assignor.)		
9280	Bruckett, Joseph.	Shoes and gaiter boots.	XVI.
93-0	Bruden, John G., assignor to J. G. Braden and G. Perkins.	Sewing machines.	II.
9130	Bradway, Abel.	Shingles, machines for shaving.	XIV.

9090	Bradway, Abel, and E. Valentine.....	Bridges, construction of.....	IX.
9229	Bradway, A., and E. Valentine.....	Saw set.....	XIV.
9047	Brand, Christopher C.....	Lance, bomb, for killing whales.....	XXII.
	Briggs, John.....	Dyeing, apparatus for.....	Disclaimers.
9091	Bristol, Albert G., and Joel C. Jackson.....	Car seats.....	X.
8751	Brenner, Frederick.....	Wheels, cast-iron car.....	X.
8852	Bronson, William C.....	Indian rubber, preserving.....	IV.
9446	Brown, C. B.....	Saw mills.....	XIV.
8680	Brown, George, assignor to G. Brown and J. Munro.....	Harvesters, grain and grass.....	I.
	Brown, John.....	Piano-forte action.....	XXIII.
9176	Brown, J. S.....	Gift of sail vessels, mode of constructing the.....	XX.
9092	Brown, James S.....	Gates, double.....	IX.
9311	Brown, Lucien A., and Hubbard Bigelow, assignors to Henry K. W. Welch.....	Turning engines.....	XIV.
		Churns.....	I.
508	Bryant, Walter.....	Table frame and legs.....	Design.
9364	Bryant, Walter, assignee. (See Nathan Ames.).....	Planes, edge, for shoemakers.....	XVI.
9426	Bucher, Nicholas.....	Printing presses.....	XVIII.
	Buck, Martin, James H. Buck, Aaron H. Cragin, and Franklin A. Tenney, assignors to Aaron H. Cragin.....	Iron, coating, with copper.....	II.
9270	Bucklin, Theodore G.....	Car seats, railroad.....	X.
8935	Buell, Abel B.....	Fish, spinning bait for catching.....	XXII.
8553	Buel, Julio T.....	Signals, railroad.....	IX.
9245	Bugbee, Aurin.....	Driers, grain.....	V.
8769	Bulkley, Henry G.....	Planters, seed.....	I.
9381	Bullock, William.....	Pail bales, &c., machinery for bending.....	II.
9438	Bunker, Robert.....	Stoves, coal.....	Design.
439	Burgess, John, assignor to Geer, Chaffee, & Richmond.....	Stove.....	Design.
433	Burnam, Sanford.....	Horse-shoe nail machine.....	Add'l imp't.
1620	Burnett, Marshall.....	Meat cutters.....	XVII.
8936	Burns, William.....	Cheeses, modes of covering.....	I.
8625	Bushnell, Upson.....	Mill spindles.....	XIII.
8682	Butler, Egbert T.....	Trusses.....	XX.
8837	Butler, Frederick M.....	Washboards.....	XVII.
9228	Butler, Lester.....	Vice.....	II.
9294	Butler, William.....	Faucets, measuring.....	XI.
8937	Byler, Jacob R., and George W. Sensenick.....	Compositions, explosive, for blasting rocks.....	IV.
8734	Callow, Edward.....	Ventilators.....	V.
9193	Camp, Mortimer M.....		

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
292	Campbell, George W.	Bullets, &c., manufacture of.	Reissue.
9500	Canby, Samuel.	Winnowing machines.	IX.
8735	Card, John.	Fences.	
9012	Carman, James, assignee. (See William Moore, assignor.)		VII.
450	Carpenter, Samuel M.	Paddle wheels, valves or gates for oblique float.	Design.
9112	Carpenter, Seth P.	Stove, cooking.	XVI.
8965	Carpenter, W. B., assignor to W. D. Salisbury and S. Y. D. Arrowsmith.	Nails, instrument for driving, in difficult places.	XVIII.
9480	Carr, William S.	Swivel watch-chain.	
9131	Carson, Alfred.	Water closets.	XXII.
		Motion, method of converting reciprocating rotary into reciprocating rectilinear.	XIII.
8736	Carter, Egbert P.	Railroad gates.	X.
8716	Cary, A. W.	Coupling hose.	XI.
9178	Case, Jarvis.	Mills, cider.	XIII.
9164	Castor, Thomas.	Wagons, dumping.	X.
9428	Caswell, John, assignor to Archibald C. Powell.	Screwing bolts, &c., machinery for.	II.
9179	Catlin, Henry W., administrator of Alexander Catlin.	Stone, machines for dressing.	XV.
9382	Chadwick, William P.	Presses, oil.	XII.
9353	Chamberlain, Dexter H.	Drill, or bit, stock.	II.
8966	Chambers, John B.	Morusing machines.	XIV.
	Chandler, Henry P. (See Pearl & Chandler.)		
530	Chapin, Nathan, assignor to Nathan Chapin and John F. Driggs.	Window blinds.	Design.
	Chapman, Levi, assignee. (See Thomas Law, assignor.)		
9400	Chichester, Lewis S.	Flax pullers.	I.
8700	Chichester, Lewis S.	Hemp brakes.	III.
	Churchill, W. W., and Joseph Baxter, assignees. (See Thomas Walker.		
	Clark, David, and M. W. Baldwin. (See M. W. Baldwin.)		
	Clark <i>et al.</i> (See Farnum, John P., assignor.)		
9165	Clark, Francis N.	Tally board.	XXII.
8994	Clayton, Terence.	Glass, plate and window, manufacture of.	XV.
	Clayton, Edwin B., & Sons, assignees. (See Stephen E. Parrish, assignor.)		

8671	Clement, Edwin B.	Churns.	I.
9316	Clement, William H.	Sugar pans, scumming apparatus for.	IV.
9315	Clement, William H.	Sugar boiling apparatus.	IV.
8877	Cleveland, Charles.	Pen-holder, fountain.	XVIII.
8883	Clinton, Thomas G.	Matresses.	XVII.
9463	Clow, Charles N., Charles, and Abram.	Scythe snaths.	I.
9013	Cochran, John W.	Mill for crushing quartz.	XIII.
8854	Cochran, John W.	Stone-cutting machines.	XV.
9441	Coe, Charles W.	Drilling machines.	II.
8709	Coleman, William and Stephen G.	Ship's blocks.	VII.
8752	Collier <i>et al.</i> , assignees. (See Jennings <i>et al.</i>)	Valve, motion, duplex eccentric.	VI.
9439	Collins, John J. G.	Planters, seed.	I.
220	Colver, Lewis W.	Bedsteads.	V.
9048	Colver, Nathaniel.	Radiators, heat.	XVIII.
9014	Compton, William.	Piano-fortes.	XVI.
9213	Conant, Hezekiah.	Lasting boots, instruments for.	II.
9194	Conklin, John W., H. L. Sidman, and E. Whritner.	File-cutting machinery.	Design.
468	Conklin, J. H., assignor to R. R. Finch, sen., and R. R. Finch, jr.	Stove, cooking.	Design.
436	Conklin, J. Harvey, assignor to W. D. & F. Vredenburg.	Stoves.	X.
8626	Cook, George.	Carriage curtains, lock for.	XVIII.
9166	Cook, H. P.	Stereotype plates, casting.	XXI.
9146	Cook, James C.	Button backs, machines for forming.	XIII.
8786	Cook, Samuel.	Flour bolts.	I.
9339	Cooper, Lewis.	Lime and manure spreading.	II.
8855	Cooper, M. T.	Doors, apparatus for closing.	XXII.
8681	Copeland, A. H.	Sand-paper holder.	III.
8995	Cornack, Jno. A. and George.	Oakum, processes for preparing.	XIII.
8717	Cornell, B., assignee. (See W. F. Davis, assignor.)	Horse powers.	XV.
9415	Cornell, M. H.	Stone, drilling, machines for.	I.
8701	Couch, Joseph J.	Grass burner.	XIII.
8718	Cowles, James, assignee. (See Alexander Kelsey.)	Grinding quartz, mills for.	II.
9449	Cragin <i>et al.</i> (See Bucks, Cragin, and Tenney.)	Saw gummers.	XIII.
9049	Cramer, R. S., and C. C. Blossom.	Horse powers.	VI.
8797	Crane, Aaron D.	Gauge, pressure.	VI.
8787	Crawford, Benjamin.	Gauge, water, of boilers, &c.	II.
8737	Crawford, John M.	Chains, machinery for making.	

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
8647	Creighton, James R.	Blind and shutter operator.....	II.
9331	Creighton, James R.	Blind operator and fastener.....	II.
	Cresson, Wm. P., assignee. (See Beesley and Delancy.)		
9066	Crooker, Wm. P., assignee. (See Frederick Shultz.)		
9050	Cross, Abraham V.	Propelling vessels.....	VII.
	Crosby, R., assignor to Ransom Crosby, jr. (See H. D. Edgecomb.)	Wagons, dumping.....	X.
	Crosby, R., assignor to Ransom Crosby, jr. (See H. D. Edgecomb.)		
8798	Crosby, Thomas	Carpets.....	III.
8838	Crum, John	Screw-blanks, rivets, &c., machinery for shaving the heads of.....	II.
8702	Cumberland, John	Planing machines, feeders for.....	XIV.
	Cummings, Wm. D. (See Taliaferro and Cummings.)		
9180	Curtis, M. S., and Edgar St John	Frogs, railroad, method of securing movable points of.....	X.
9271	Daniels, Reuben	Drilling, hand, machine.....	II.
9015	Daniels, Reuben	Fuel, granular, the manufacture of, from brushwood and twigs.....	V.
9501	Daniels, Reuben	Gas, illuminating, process of making.....	IV.
8896	Daniels, George, P. Nicholas, and F. Lopez	Cow-carrier.....	X.
8719	Darling, Cook	Railroads, mode of preventing collisions on.....	X.
8938	Davis, Thomas A.	Brushes, manufacture of.....	XVII.
8919	Davis, Lewis H., assignor to J. A. Digdale.	Lever jacks.....	XII.
9399	Davis, Lewis H., and Saml. and Morton Pennock.	Planters, seed.....	I.
9203	Davis, Washington F., assignor to B. Cornell.	Paints, processes for making.....	IV.
9416	Davis, Wm. F. and N.	Churns, swinging.....	I.
9470	Dawson, Joel	Straw cutters.....	I.
9016	Dawson, William	Cigars, machines for making.....	XXII.
8703	Day, Willard	Sewers, street.....	IX.
8939	De Bibory, L. S.	Boilers, cooking.....	V.
8770	Dechamps, F. O.	Omnibus registers.....	X.
9167	De Corn, Louis	Compositions for preserving butter.....	IV.
9442	Degen, Francis	Hats.....	III.
8630	De Guinon, R. V.	Lamps, camphene.....	V.
	De Hart et al. (See Bertolet, Kirk, and De Hart.)		

Delancy and Beesley, assignors to Wm. P. Cresson. (See Beesley and Delancy)	
Delescluze, Charles	9317
Demerit, John	8839
Densmore, Byron	8720
Densmore, Joel	9183
Dewey, Daniel S.	8902
De Witt, Henry G.	9067
Dickson, Perry	8903
Dietz, Robert E.	539
Dimpfel, F. P.	8799
Disbrow, Caleb R.	9068
Dodge, Daniel	9051
Dodge, George H.	8633
Dodge, George H.	8997
Dodge, Thos. H.	8832
Dodge, Thos. H.	9354
Donisthorpe and Lister. (See Lister and Donisthorp.)	
Donnell, Geo. O.	8771
Dorsch, Peter	9017
Down, Samuel, assignee. (See N. Perkins.)	
Downs, Abel. (See Birdsill Holly, assignor.)	
Doyle, Thos. J.	8834
Dzer, A. S.	9481
Drake, John S.	9232
Draper, S. W. and R. M.	8967
Drescher, Louis	9447
Driggs, John T. and N. Chapin, assignees. (See Nathan Chapin.)	
Duffey, James P.	9113
Dugdale, J. A., assignee. (See Lewis H. Davis.)	
Dulley, James J., assignor to Johnson, Cox, & Fuller	502
Dunn, Jno. G., and Alfred F. Hows.	9250
Dupuy, Chas. M. (See Salah Hilt and C. Dupuy, jr.)	
Duryea, Townsend	9018
Dutcher, E. and W. W.	9302
Eames, Albert	8998
Eames, Albert	9147
Eames, Albert, assignor to Chas. T. Shelton	8752
Earl, Absalom B.	8753
Earls, John M.	8904
Eastman, Robt., assignor to Seth Eastman.	9132

Distilling apparatus	IV.
Razor strops	XXI.
Harvesters, grain	I.
Printing presses	XVIII.
Shuttle for weaving hair-cloth, &c.	III.
Last-holder, revolving	XVI.
Sleds, hold-back for	X.
Grandole	Design.
Grate bars, construction of	V.
Trucks, railroad car	X.
Nail, wrought, machinery	II.
Spinner, ring	III.
Joining frames, cop	III.
Signals, marine	VII.
Signals, marine	VII.
Chairs	XVII.
Wheels, cast-iron car	X.
Winnowers	I.
Ventilator	V.
Legs, artificial	XX.
Stone-dressing machines	XV.
Battery, galvanic	VIII.
Caissons, cast-iron	IX.
Stove, parlor	Design.
Composition of enamels	IV.
Daguerreotype plates, polishing	XVIII.
Looms, temples for	III.
Spark deflector	X.
Stone, sawing, saws for	XV.
Stone, machines for dressing	XV.
Saw-cutters	I.
Smut machinery	XIII.
Stone, machines for dressing	XV.

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9181	Eaton, A. K.	Tanning.	XVI
477	Eberly, Samuel	Stove, cooking	Design.
9168	Eccles, Samuel and James.	Looms for weaving figured fabrics	III.
8870	Edgcomb, H. D., assignor of his interest to R. Crosby, and R. Crosby, assignor to Ransom Crosby, jr.	Tonguing boards, machines for	XIV.
221	Edgcomb, H. D., assignor of his interest to Ransom Crosby, and R. Crosby, assignor to Ransom Crosby, jr.	Tonguing boards, machines for	Reissue.
8905	Edson, Nathaniel T.	Steering apparatus, relief	VII.
9258	Edwards, Rd., and Morris & Mathews, assignees. (See Nathan Mathews, assignor.)	Washing machines or other purposes, connecting joints for	XVII.
8978	Egbert, S. L., and S. W. Green.	Corn-shellers.	XIII.
9281	Edridge, David	Saw-gummet, jointed bed-plate.	II.
8754	Elmer, H. O.	Horse powers, endless chain.	XIII.
9443	Emery, Horace L.	Tonguing and grooving apparatus	XIV.
9443	Emmons, Phineas		
9443	Eunson, Robert G., assignee. (See Powell, Barlow, & Holden.)		
925	Evans, Cadwallader.	Boilers, steam, and apparatus to be used on board of steamboats, to prevent explosions of boilers.	Reissue.
8738	Evans & Walroth. (See Walroth, Daniel, & Lucius Evans.)		
8964	Everett, Edward, and Samuel T. Thomas. (See Thomas & Everett.)		
9279	Fagin, Lewis.	Bran dusters.	XIII.
8920	Falkenaw, Albert and Morris, and Morris Pollak.	Swivel hooks.	XVIII.
9503	Farmer, Moses G.	Clocks, galvanic.	VIII.
9020	Farmer, Moses G.	Electro-magnetic alarm bells.	VIII.
8955	Farnum, John P., assignor to John P. Farnum, J. Jenkins, & C. B. Clark.	Cutting paper	XVIII.
9417	Farrand, Jehiel T.	Tubes, machinery for making sheet-metal.	II.
8835	Farrell, James W.	Boilers, steam	VI.
8835	Faulkner, Augustus.	Pile-wires, pincers for operating	II.
8835	Faulkner, James. (See Wicks & Faulkner.)	Sash stopper and fastener.	II.

Fergus, William F., & James M. Patton. (See James M. Patton.)	8684	Valves, the relief, in partially condensing engines, mechanism for operating.	VI.
Fetter, William. (See Peters & Fetter.)		Oil cans.	V.
Few, William, and Francis Armstrong.		Forging metals, &c., machinery for.	II.
Field, S., and C. W. Heald.	9233	Thimbles for rigging, &c., machines for making.	XVII.
Field, William.	9471	Winnowing machines, shakers of.	I.
Field, William.	9402	Wheels and axles of cars, protecting, by encasing them.	X.
Fillbrun, Henry.	8653		
Finch, A. L.	8886		
Finch, R. R., senior, and Finch, R. R., junior, assignees of J. H. Conklin. (See J. H. Conklin.)			
Finch, R. R., senior, and Finch, R. R., junior, assignees. (See Sanderson, W. L.)			
Finch, R. R., senior, and Finch, R. R., junior, assignees of W. L. Sanderson. (See W. L. Sanderson.)			
Finney, William C.	9430	Hoes.	I.
Fisher, Mark, and John H. Norris.	8871	Welding steel, &c., to cast-iron, method of.	II.
Fisher, Mark, and William Martin, jr.	227	Welding cast-iron to malleable iron or steel.	Reissue.
Fitzgerald, Daniel.	9247	Harvesters, grain.	I.
Fitzgerald, Daniel, and John H. Smith.	9182	Harvesters, grain and grass.	I.
Flick, John J.	9133	Harness, cruppers for.	XVI.
Flanders, J. F., assignor to F. Reys and E. Wilcox.	8627	Metal disks, machine for turning up the edges of sheet.	II.
Fleischel, Charles.	9019	Locks, alarm.	II.
Forbush, Eliakim B.	9134	Harvesters, grass.	I.
Forman, James H.	8721	Ploughs, shovel.	I.
Forrest, James C., and George Baker.	9462	Trip-hammers.	II.
Foster, Charles.	9295	Printing presses.	XVIII.
Foster, John T.	9069	Potato diggers and stone gatherers.	I.
Foster, Walter K.	9214	Cheese, machine for cutting.	XVII.
Foulis, Robert.	9318	Gas, illuminating, apparatus.	IV.
Fox, Jonathan.	9183	Carriages.	X.
French, Ephraim. (See J. Holmes and E. French.)			
French, James S.	9052	Planes, inclined, method of ascending.	X.
Furgang, William F.	8887	Piano-fortes, organs, &c., keys of.	XVIII.
Fyler, Orsamus R.	9148	Churn and butter-worker.	I.
Gale, Warren.	9452	Straw-cutters.	I.
Gallagher, A. J., and J. J. Baker.	452	Stoves, cooking.	Design.
Gallagher, James C., and William F. Tirado, assignees of Don Juan Ramos. (See Don Juan Ramos.)			
Gallagher, James C., and William F. Tirado, assignees of Don Juan Ramos. (See Don Juan Ramos.)			

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9021	Gambrell, Horatio N.	Cotton-yarn, preparing, for the manufacture of duck and other coarse fabrics.	III.
9070	Garachon, Francis. Gardner, Albert, and Albus Gardner, administrators of W. L. Hunter. (See Hunter & Gardner.) Gardner, George Arthur. (See Lemuel P. Jenks, assignor.) Gardner, Mitchell C. Garretson, Mahlon. Gates, Stephen. Gates, William A. Gates, William A. Gaylord, Edward L. Geer, Chaffee, & Richmond, assignees. (See John Burgess.) Geiser, Peter. Gomunder, Albert & George. Gest, Joseph H. Gibbs, S. W., assignor to North, Harrison, & Chase. Gilbert, Joseph G. Gilliland, John. Goddard, Kingston. Goffin, F. C. Goffin, F. C. Goodell, F. (See Marston & Goodell.) Goodyear, Charles. Goodyer, R. B., & B. H. Jenks, assignors. (See Jenks & Goodyer.) Goolman, William P., and William Holselaw, jr. Goulding, Henry. Goulding, John. Goulding, John. Gordon, George P. Grant, George. Green, Jeremiah D., assignor to Messrs. Morrison & Tibbits. Green & Egbert. (See Egbert & Green.) Greenhagh, James. Greenwood, M., & Co., assignees. (See Charles Zeuner.)	Screw-cutting stocks, adjusting the chasers in. Harvesters, clover. Furnaces, hot-air. Planters, cotton-seed. Ploughs. Carpet-bag frames, &c., machinery for bending. Grain separators. Organs. Rollers, field, for cutting stalks and weeds. Stove, cooking. Threshing machines. Lenses, glass, manufacture of. Axles, carriage. Locks. Vault and safe doors, &c., method of securing. India-rubber bat cloth, modes of making. Scales for weighing. Drilling stone, machines for. Looms, jacquard. Looms, the motion of the lay in. Printing press. Hinge for moulders' flasks. Stove, parlor. Looms, mode of counterbalancing harnesses in.	II. II. II. I. I. I. II. I. XVIII. I. Design. VIII. X. II. II. IV. XII. XV. III. III. XVIII. II. Design. III.

9093	Gridley, J. B.	Bridges, construction of.	IX.
9195	Griffiths, Robert.	Chairs, wrought-iron railroad, machine for making.	IX.
8388	Grilley, Charles T.	Screws, capping of.	II.
8629	Grimes, William C.	Gauge, steam and water.	VI.
9053	Grover, William O., and William E. Baker.	Sewing machines.	III.
9242	Guard, Chauncey H.	Wheels, carriage, machines for making.	X.
9342	Guersey, Lucius T.	Printing presses.	XVIII.
9431	Guild, Joseph.	Mortising machines.	XIV.
9320	Gustin, John S.	Electro-magnetic engines.	VIII.
9291	Gustin, John S.	Electro-magnetic engines.	VIII.
9321	Guthrie, Alfred.	Valves, safety.	VI.
9404	Hadaway, J. B. S.	Sash stopper and fastener.	II.
	Hainakin, Christopher A., assignee. (See Sonnenburg & Rechten.)		
9296	Haldeman, D.	Planters, seed.	I.
8889	Hale, Daniel.	Suites, machine for drawing.	X.
9272	Hall, J. H., and John Lowrey.	Collars, horse.	XVI.
9135	Hall, William.	Brakes, railroad car.	X.
212	Hall, William.	Lock, powder-proof.	XIV.
8373	Hamilton, James.	Casks, machinery for making.	IX.
8840	Hamilton, James.	Dredging machines.	XIV.
8572	Hamilton, James.	Sawing, mills for curvilinear.	II.
9322	Hamilton, Walter.	Seaming, double, machines.	XVII.
9243	Hammer, Adolph.	Refrigerators of wort.	X.
9449	Hammit, John T.	Chairs.	XVII.
8800	Hammit, John T.	Bedsteads, sofa.	Design.
507	Hampton, Adams.	Grate frame and summer piece.	XIV.
9115	Hand, Furman, jr.	Shingle machines.	Design.
9418	Harnon, E. C.	Type, setting, spaces for.	XVIII.
	Harris, Conrad, and Paul William Zolner.	Stoves.	Design.
445	Harris, C., and P. W. Zolner.	Stove, parlor.	V.
499	Harrison, Alexander.	Grates, rotary stove.	IV.
9297	Harrison, Alexander.	Ink, vessels for making.	I.
8755	Hart, Edson.	Planters, seed.	V.
9343	Hartell, W., and J. Lancaster.	Heat, mode of generating.	IV.
9419	Haskin, James P.	Salt, common, manufacture of.	X.
9244	Haussknecht, Gustavus L.	Carriages, running gear of.	XVIII.
8648	Hawkes, Charles W.	Printing presses.	V.
9259	Hayes, John P.	Ranges, cooking.	IX.
8685	Hayden, Peter P. R.	Chairs, railroad, manufacture of.	Design.
8631	Heald, C. W., and S. Field. (See Field & Heald.)		
	Hebbard, Henry, and John Polhamus.	Spoons.	
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V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9149	Hammingway <i>et al.</i> (See Jennings <i>et al.</i>)	Harness, fastenings for.....	XVI.
8773	Henderson, Thomas.....	Looms, knitting.....	III.
457	Henson, William.....	Stoves, cook.....	Design.
9140	Herrick, Thomas A., assignor to Lemuel M. Leonard.....	Iron fences, mode of fastening the palings to the rails in.....	IX.
8632	Hess, George, assignor to Sylvanus Shiner.....	Rollings, iron.....	III.
	Lewitt, Latham, Holly, & Downs, assignees. (See Birdsall Holly, assignor.)	Looms, knitting.....	
8739	Hidbreth, Abel.....	Bean dusters.....	XIII.
9025	Hill, Selah, and Charles M. Dupuy, jr.....	Derricka.....	XII.
9461	Hill, S., and Thomas Snook. (See Snook & Hill.)	Acid, sulphuric, manufacture of.....	IV.
9273	Hinton, Robert.....	Castors, ball, manufacture of.....	II.
8701	Hobart, Seth L.....	Wardrobes, portable.....	XVII.
8722	Hochstrasser, Henry, and A. Masson.....	Door spring.....	II.
8979	Hodge, Amos.....	Switches, railroad.....	VII.
9054	Hodge, Nehemiah.....	Wheels, railroad car.....	X.
9344	Hodge, Nehemiah.....	Car, foot.....	X.
9365	Hodgkins, Christopher, assignor to Nehemiah Hunt.....	B-lge water, &c., apparatus for elevating and discharging.....	X.
	Hodgson, Wm., and Geo. S. Stearns. (See Stearns & Hodgson.)	Sewing machines.....	III.
8740	Holt, L. B.....	Looms, stop motions of.....	III.
8921	Hollingsworth, Christopher.....	Washing machines.....	XVII.
8730	Hollen and others, assignors. (See Powell, Barlow, & Holden.)	Brakes, railroad car.....	X.
9094	Holly, Birdsall, assignor to Silas Hewitt, Edward S. Latham, Birdsall Holly, and Abel Downs.	Planca, hand.....	XIV.
	Holly, B., W. Rice, and H. C. Silsby, assignees. (See Washburn Rice, assignor.)		
8723	Holm, Ferdinand.....	Baths, portable shower.....	XX.
8948	Holmes, John. (See Peter Stebbins and John Holmes.)	Carding by which variegated slivers are produced.....	III.
9260	Hollislaw, Wm., jr. (See Goodman & Holteclaw, jr.)	Lightning rods.....	VIII.
	Homan, Herman H.....		

9484	Hopkins, L. E.	Hat bodies, machinery for manufacturing.	III.
9450	Hopkins, Lansing E.	Hat bodies, machines for manufacturing.	III.
9215	Hopkins, S. D.	Bed for invalids.	XVII.
8940	Horne, Jos. B. & John R.	Soldering in a vacuum, apparatus for.	II.
533	Horton, Nicholas T.	Railing, iron.	II.
8922	Hotchkiss, Andrew.	Wrench, adjustable.	XIII.
9072	Hotchkiss, Gideon.	Mill spindles, hanging steps of.	I.
9172	Hough, Ezra.	Ox yokes.	Design.
494	House, Samuel A., assignor to Hiram House.	Stove, front parlor.	Design.
493	House, Samuel A., assignor to Hiram House.	Stove, parlor, top and front plates of a.	Design.
492	House, Samuel A., assignor to Hiram House.	Stove plate, parlor.	Design.
9505	House, R. E.	Telegraph, magnetic printing.	VIII.
9465	Houston, Joseph U.	Picks, stone.	XIII.
9141	Houston, J., and E. Ross.	Brakes, railroad car.	X.
9185	Howard, Charles.	Motion, method of converting reciprocating into rotary.	XIII.
8824	Howard, Charles.	Swingle-trees.	X.
8823	Howarth, John.	Planing machines.	XIV.
9282	Howe, George.	Piano-forte action.	XVIII.
	Howes & Dunn. (See Dunn & Howes.)		
9323	Hughes, James.	Honiny mills.	XIII.
9345	Hulbert, Abijah.	Vices, jaw, turning.	II.
9243	Hunt, Charles H.	Spinning machines, throstle.	III.
213	Hunt, Marshall J.	Planter, gearing of a seed.	Raissee.
	Hunt, Nehemiah. (See Swingle & Hunt.)		
	Hunt, Nehemiah. (See Hodgekins, assignor.)		
9362	Hunter, William L., Albert Gardner, administrator of, and Albert Gardner.	Ploughs, constructing.	I.
456	Huntley, Hosea H., assignor to David T. Woodrow.	Stove, cooking.	Design.
9359	Huntley, Hosea H., assignor to David T. Woodrow.	Stove, cooking.	V.
8646	Huse, Samuel.	Metres, water.	XI.
9472	Hussey, Zamri.	Club feet, apparatus for the cure of.	XX.
9467	Hussey, Zamri.	Fractures, apparatus for treatment of.	XX.
514	Hutton, P. M.	Cradle, cast-iron.	Design.
	Hutton, P. M., and R. H. Rensen. (See R. H. Rensen.)		
9026	Ilea, Charles, assignor to E. H. Ashcroft, assignor to E. H. Ashcroft and George Savage.	Stone, initiation.	XV.
8633	Ineley, Henry E.	Daguerreotype pictures.	XVIII.
8687	Isbister, Caleb.	Nail plate feeder.	II.
5059	Jackson, James L.	Grate frame.	Design.
440	Jackson, James L.	Grate frames.	Design.
441	Jackson, James L.	Grate frames.	Design.

V.—*Alphabetical list of patents issued*—Continued.

No.	Patentee.	Inventions or discoveries.	Class.
481	Jackson, James L.	Grate frame and fender	Design.
482	Jackson, James L.	Grate frame and fender	Design.
492	Jackson, James L.	Grate frame and summer piece	Design.
417	Jackson, James L.	Grate frame and summer piece	Design.
483	Jackson, James L.	Grate frame, summer piece, and fender	Design.
443	Jackson, James L.	Mantle grate, frame, and summer piece	Design.
9298	Jackson, Joel. (See Bristol & Jackson.)		
9136	Jackson, Robert M.	Planters, seed	I.
9150	Jacobs, Clark.	Hullers, rice	I.
9357	Jacot, Charles E.	Escapements, duplex	VIII.
9345	Jacot, Charles E.	Watch keys	XI.
	Jagger, Ira.	Water wheels	.
	Jagger, Treadwell, & Perry. (See John S. Perry.)		
	Jagger, Treadwell, & Perry. (See John S. Perry.)		
	Jagger, Treadwell, & Perry. (See Sam'l F. Pratt.)		
	Jagger, Treadwell, & Perry. (See Sam'l F. Pratt.)		
9027	Jarrosson, Leon.	Archil, preparations of	IV.
8874	Jenks, B. H., and R. B. Goddyer, assignors to B. H. Jenks.	Looms for weaving figured fabrics	III.
9379	Jenks, Lem'l P., assignor to Joseph W. Page, assignor to Geo. Arthur Gardner.	Stone, drilling, machines for	XV.
8654	Jenkins <i>et al.</i> (See Farnum, Jno. P., assignor.)		
8941	Jenkins, Henry		
9414	Jenkins, James	Iron fence, ornamental connexion of the parts of an	II.
	H. T. Jennings, C. S. Collier, and T. P. How, assignors to H. T. Jennings, C. S. Collier, Amengo Beardsley, and Allen Hemmingsway.	Printing oil-cloths, blocks for	XVIII.
		Cordage machinery	III.
536	Jenny, E., assignee. (See David Rood and E. Jenny)	Stove, cooking	Design.
535	Jewitt, S. S., and F. H. Root	Stove places	Design.
9073	Jewitt, S. S., and F. H. Root	Belstead fastenings	XVII.
9095	Johnson, Jasper	Hubs, &c., patterns for metal	II.
8649	Johnson, John, assignor to Elias Johnson.	Piled fabrics, apparatus for cutting the pile of	III.
8969	Johnson, Cox, & Fuller, assignees. (See James J. Dulley, assignor.)	Stills, worm-tubs for	IV.

9074	Johnston, James I.	Moulding hollow ware, &c.	II.
	Jones, Chs., and J. Levy. (See John Levy and C. Jones.)		
8980	Jones, John.	Copying manuscript.	XVIII.
9173	Jones, John O.	Horse-shoe, elastic.	II.
9485	Jones, J., and A. Lyle.	Threshers, grain, and cleaners.	I.
9405	Jones, Robert V.	Blind and shutter operator.	II.
8756	Jones, Samuel T.	Zinc, white, manufacture of.	IV.
8325	Joslin, Wm.	Cordage, machines for making.	III.
8757	Judd, Oliver B.	Saw-mills.	XIV.
211	Judson, Isaac.	Staves, machinery for dressing.	Reissue.
9192	Kane, Jno. W.	Mill dress.	XIII.
9261	Keeler, Chas. and James.	Smut machines.	XIII.
	Kellar, Wm. C., and Thos. Mardock. (See Thos. Mardock.)		
	Kelley, Wm. S. (See Knott and Kelley.)		
9324	Kellogg, Daniel.	Presses for bundling flocculent and other substances.	XII.
8634	Kellogg, Edward.	Wool-picking machines.	II.
8908	Kelsey, Alexander, assignor to Jas. Cowles.	Furnaces, warm-air.	V.
9366	Kelsey, Franklin.	Propellers, vibrating.	VII.
9406	Kennedy, David.	Tanning.	XVI.
9020	Kennedy, Wm. S.	Saddles.	XVI.
8949	Kennison, Geo. W.	Stoves.	V.
9451	Ketchum, Richard.	Lock.	II.
8724	Ketchum, W. F.	Harvesters, grass.	I.
9325	Kidder, Walter.	Gas regulators.	IV.
9326	Kidder, Walter.	Gas regulators.	IV.
9327	Kidder, Walter.	Gas regulators.	IV.
504	Kilburn, Francis.	Fence, wire.	I.
8344	Killan, Harvey, and Geo. Valleeu.	Ploughs, gang.	I.
9174	Kimball, Alpheus.	Seythe fastenings.	I.
8635	Kimball, Hiram.	Shovels, construction of.	I.
9299	Kimball, V. P. and B.	Spark arrester.	VI.
215	King, James T.	Washing apparatus.	Reissue.
	King, Obed and Ezra. (See S. C. Mendenhall and O. and E. King.)		
9186	Kingsland, Jos., jr., and Norman White.	Paper, sized, mode of drying.	III.
8526	Kinman, Nathan.	Packers, flour.	XIII.
	Kinsley, Lyman, and Moody Belknap. (See Belknap, assignor.)		
9452	Kinsley, Rhodolphus.	Lock, pad.	II.
9407	Kinsley, E. and D.	Bottle stopper.	XXII.
	Kirk <i>et al.</i> (See Bertolet, Kirk, and De Hart.)		
8906	Klein, John F.	Switches, railroad.	X.
534	Knapp, Gilbert, and A. H. Neal.	Stove, coal.	Design.

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9274	Knight, Robert.	Bevelling the edges of skelps or metallic strips, &c., machinery for.	II.
9284	Knowles, Hazard.	Saw-mills.	XIV.
9151	Kraber, Adam.	Planters, seed.	I.
8899	Kraft, Benjamin.	Brakes, railroad car.	X.
8688	Kraft, Benjamin.	Iron railings.	II.
9055	Krausser, John.	Harvesters, clover.	I.
8999	Krupp, Alfred, assignor to Thos. Prosser.	Spoons, forks, &c., machinery for making.	II.
216	Lahaye, John.	Brakes, self-detaching.	Reissue.
9367	Laidlaw, John.	Gas metres.	IV.
9137	Lake, Jesse S. and David.	Harvesters, grass.	I.
8910	Lamb, Andrew, and Wm. Alltoft Summers.	Boilers, sheet water space, stud brace for flues of.	VI.
	Lancaster, J., and W. Hartell. (See Hartell and Lancaster)		
	Langdon, Barnabas.		
9300	Langstroth, Lorenzo L.	Planing plank boards and clap-boards, machine for.	Extension.
	Latham, E. S. (See Birdsall Holly, assignor.)	Shingles, machine for planing.	Extension.
8856	Latham, Henry B.	Bee-hives.	I.
9217	Latham & Wheeler. (See Wheeler, Jno. W., & O. B. Latham.)	Collars, horse.	XVI.
8801	Latta, A. B.	Telegraphs, signal.	VIII.
8802	Latimer, James.	Joints around glass tubes for philosophical apparatus.	VIII.
	Laurence, Samuel, assignee. (See Joseph Weight.)	Ploughs, shovel.	I.
	Laurie, R. D. (See Taylor & Laurie.)		
521	Law, Thomas, assignor to Levi Chapman.	Pedestal and column.	Design.
8803	Laws, Thos. J.	Gins, cotton.	III.
	Lawrence, Archilus. (See Abbot and Lawrence.)		
	Lawrence, Archilus. (See Abbot and Lawrence.)		
	Lawrence, Archilus. (See Abbot and Lawrence.)		
	Lawrence, A., and J. G. Abbot, assignees. (See Sam'l H. Sailor, assignor.)		
	Lawrence, A., and J. G. Abbot, assignees. (See Sam'l H. Sailor, assignor.)		
	Lawrence, A., and J. G. Abbot, assignees. (See Sam'l H. Sailor, assignor.)		

V.—Alphabetical list of patents issued—Continued.

No.	Patentees.	Inventions or discoveries.	Class.
8875	Macy, E. & S.	Reeling machines.	III.
9251	Magoon, Israel P.	Locomotives, &c., feed water of apparatus for heating.	VI.
8776	Maillefert, Benjamin	Blasting rocks under water.	IX.
8891	Marsh, Andrew	Refrigerators.	XVII.
9276	Mallory, James E.	Cutting paper, machine for.	XVIII.
478	Malony, Patrick	Water-cooler.	Design.
9138	Manning, William	Harvesters, grass.	I.
9423	Manny, John H.	Harvesters.	I.
	Marcellus, A. (See Stowell & Marcellus)		
9386	Mardock, Thomas	Saddles.	XVI.
9328	Mardock, Thomas, & William C. Kellar	Harness saddle-trees.	XVI.
8970	Marsh, David	Flour bolis.	XIII.
8815	Marshall, Hickford, and Seth S. Cook, assignors to John Bostwick, jr., and Elbert White.	Chain, jack, machinery, arrangement of.	II.
8956	Marston, William H., and Frederick Goodell.	Cartridges for breech-loading guns.	XIX.
9116	Martin, Joseph P.	Brakes, railroad car.	X.
9302	Martin, Joseph P.	Clothes, machines for wringing.	XVII.
	Martin, William, jr., and Mark Fisher. (See M. Fisher.)		
	Marx, E., and A. Speer. (See Speer and Marx.)		
	Mason, William H.	Oils, lubricating.	IV.
8971	Masson, A. (See Hochstrasser & Masson.)		
8898	Mathews, Nathan, assignor to Rd. Edwards, David A. Morris, and Nathan Matthews.	Circle plates, roses, &c., with dovetailed grooves, devices for casting.	II.
8857	Mathews, Nathan, assignor to Rd. Edwards, David A. Morris, and Nathan Matthews.	Knobs to doors, &c., method of attaching roses for.	II.
8656	Muxfield, Charles A.	Looms for weaving piled fabrics.	III.
9218	Maxwell, Rufus	Churns.	I.
	Maydole, David, assignee. (See Erasmus Smith.)		
8957	Maynard, Edward	Swings.	XXII.
	McAbee, J. N., assignee. (See E. Ball.)		
9075	McCarthy, Henry	Sheet-iron while in process of manufacturing, method of heating.	II.
9303	McCarthy, James	Puddling iron, &c., apparatus for.	II.
5923	McClintic, John	Safety-valves, differential.	VI.
	McClure, Samuel, assignee. (See Ripley & Vedder.)		

8823	McCollum, John.....	Cracker machines.....	XVII.
9152	McCord, William.....	Soaps.....	IV.
8827	McGray, Thomas H.....	Smut machines.....	XIII.
9454	McCreary, John.....	Type, wooden, manufacturing.....	XVIII.
9304	McDonald, James and John.....	Piano-fortes.....	X.
9325	McElfatrick, Samuel.....	Railroads, apparatus for transporting trains on inclined planes of.....	XX.
8329	McIlhenney, William S.....	Teeth, artificial, manufacturing.....	I.
8841	McKinlay, Peter.....	Hullers, rice.....	I.
9031	McLagan, William.....	Harvesters.....	XVII.
9117	McLaughlin, John.....	Churns.....	X.
8673	McLaughlin, John.....	Washing machines.....	
8924	McLaughlin, Thomas G.....	Brakes, railroad car.....	
	Meacham, George A., assignee. (See Geltson Sanford.)		
9387	Mendenhall, Stephen C.....	Looms, mode of throwing shuttles in.....	III.
9388	Mendenhall, S. C., Obed King, and Ezra King.....	Looms, hand.....	III.
8689	Miller, A. S.....	Switches, railroad.....	X.
9139	Miller, Charles.....	Sewing machine.....	III.
9076	Miller, Samuel N.....	Anchor, compound.....	VII.
8742	Millholland, James.....	Boilers, steam.....	VI.
9219	Mills, Cassius A.....	Engine, rotary, abutment motion for reversible.....	VI.
923	Mimi, J. G.....	Lamp-black.....	Reissue.
9153	Minkler, Simeon.....	Track cleaner, railroad.....	X.
9057	Minniss, Theodore S.....	Mill-spindles, steps and bearings of.....	XIII.
8674	Moerer, Henry.....	Printing presses, hand.....	XVIII.
9432	McAffitt, John R.....	Threshing machines, endless belts to.....	I.
9424	Montague, Charles.....	Printing presses.....	XVIII.
9095	Montgomery, William.....	Brakes, railroad car.....	X.
9160	Moore, Cyrus, assignor to F. S. Noyes.....	Brooms.....	XVII.
9032	Moore, Frederick H.....	Blind rods, machine for wiring.....	II.
8777	Moore, Hiram W.....	Wheels, cast-iron car.....	X.
224	Moore, Lewis.....	Planter, seed, seeding apparatus of a.....	Reissue.
9265	Moore, William, assignor to James Carman.....	Locks, door.....	II.
	Morgan & Seymour. (See William H. Seymour, assignor.)		
	Morris, David A., and Edwards & Mathews, assignees. (See Nathan Mathews, assignor.)		
	Morris, David A., and Edwards & Mathews, assignees. (See Nathan Mathews, assignor.)		
8726	Morris, Ephraim.....	Governors.....	XIII.
8706	Morris, Ephraim.....	Valves of oscillating engines upon their seats, method of keeping the.....	VI.
	Morrison, A., and T. M. Tibbitts. (See J. J. Savage.)		

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9486	Morrison & Tibbitts, assignees. (See Jeremiah D. Green.)	Engines which use steam expansively, equalizing apparatus for...	VI.
8772	Morrison, William H.	Wheels, cast-iron car.	X.
8981	Moulton, Orson.	Viols.	XVIII.
	Mount, William S.		
	Mower, Samuel, and Arad Woodworth, 3d. (See Woodworth & Mower.)		
9235	Mudge, Jarvis T.	Washing machines.	XVII.
	Munro, J., and G. Brown, assignees. (See G. Brown, assignor.)		
8911	Murrow, Freeman.	Brushes.	XVII.
9033	Naraton, William H.	Mill-spindles, hanging.	XIII.
	Neal, A. H., and Gilbert Knapp. (See G. Knapp and A. H. Neal.)		
8789	Neer, Charles.	Canal lock gates.	IX.
8942	Newell, Robert.	Scales, platform.	XII.
	New England Screw Company, assignees. (See Cullen Whipple.)		
	New England Screw Company, assignees. (See Cullen Whipple.)		
9034	Newhouse, A. S.	Bedstead fastenings.	XVII.
	New Market Iron Foundry, assignees. (See David Thomson.)		
9330	Nichols, Oldin.	Mills, grinding.	XIII.
	Nicholas <i>et al.</i> (See George Damé, Nicholas, & Lopez.)		
8690	Nickerson, Charles V.	Fire-arms.	XIX.
9305	Nicolay, John G.	Printing presses.	XVIII.
9118	Noblet, Robert L.	Shingle machines.	XIV.
8758	Norcross, Edmund D.	Furnaces, air-heating.	V.
9058	Norcross, Nicholas G.	Planing machines.	XIV.
	Norris, John H. (See Fisher & Norris.)		
8982	North, Henry S., and C. D. Skinner.	Fire-arms, revolving breech.	XIX.
	North, Harrison, & Chase, assignees. (See S. W. Gibbs.)		
	North, Harrison, & Chase, assignees. (See S. H. Sailor.)		
	North, Harrison, & Chase, assignees. (See Smith, Brown, & Holzer.)		
9403	Northrup, Joel G.	Printing press.	XVIII.
8795	Nott, Benjamin, assignor to J. P. Pepper.	Door knobs, manufacture of.	II.
8759	Nott, Joel B., and William S. Kelley.	Water-wheels.	XI.
	Noyes, F. S., assignee. (See C. T. Moore.)		

8638	Nuckolls, Nathaniel.....	I.	Straw-cutters, feeding rollers in.....	I.
8972	Null, Samuel.....	XIII.	Hominy machines.....	XIII.
9306	Nutting, Mighill.....	IX.	Window-sashes, expanding.....	IX.
9331	Nutting, Mighill.....	IX.	Window-sashes, expanding.....	IX.
9468	Nycum, Henry.....	I.	Planters, seed.....	I.
	Oat, G. H. & A. A. and Leeds, assignors. (See Leeds, Oat, jr., & Oat, assignors to J. Leeds.)			
8657	O'Brien, Bartholomew.....	IV.	Candy, sugar, machines for making.....	IV.
8805	Olcott, Austin.....	V.	Lamps, Argand, burners for.....	V.
8858	Olds, William B.....	XXI.	Coat forms.....	XXI.
9000	Orelup, John, assignor to Isaiah Blood, A. G. Goff, and George R. Thomas.....	II.	Axes, process for making.....	II.
8658	Osgood, Horatio B.....	I.	Attaching pieces of metal to each other by casting, apparatus for.....	I.
8743	Osgood, R. T.....	I.	Harvesters, grain and grass.....	I.
	Ostrander, Wm. (See Woolcocks & Ostrander.)			
8973	Otis, E. G.....	X.	Trucks and brakes, railroad car.....	X.
9363	Ostot, J. D.....	II.	Saw gummers.....	II.
8606	Owen, J. Parsons.....	XVII.	Bedsteads, machines for cutting screws on rails and posts of.....	XVII.
9089	Oxland, Robert & John.....	IV.	Sugar, processes for defecating.....	IV.
9290	Packard, Isaac T.....	XVIII.	Reed instruments, bellows for.....	XVIII.
	Page, Joseph W. (See L. P. Jenks, assignor.)			
8342	Page, W. F.....	I.	Ploughs, shovel.....	I.
9119	Paine, Henry M.....	V.	Light, benzole.....	V.
8645	Paine, H. M.....	V.	Ventilating windows for railroad cars.....	V.
9200	Palmer, B. F.....	XX.	Legs, artificial.....	XX.
9252	Palmer, E. A., and A. J. Simmons.....	X.	Whiffletree hook.....	X.
8744	Palmer, William R.....	I.	Thresher, grain, feeding apparatus for a.....	I.
8676	Faunaacker, Jesse.....	XIV.	Grindstone, self-sharpening.....	XIV.
8909	Parker, Ephraim, assignor to Alfred L. Parker.....	XXII.	Tobacco, machines for pressing.....	XXII.
8691	Parker, Luther B.....	XIV.	Shingle machines.....	XIV.
8745	Parker, Robert W.....	XIII.	Pulleys, banding.....	XIII.
8530	Parish, Stephen E., assignor to Edwin B. Clayton & Sons.....	XVIII.	Books, machines for paging.....	XVIII.
438	Patterson, James, assignor to James Albro.....	Design.	Floor oil-cloths.....	Design.
9100	Pattson, James M., and William F. Fergus.....	XIV.	Planing, cutter heads for.....	XIV.
474	Paul, Amos.....	Design.	Stove plates, parlor.....	Design.
9506	Paye, Edward.....	III.	Bolts, &c., machinery for heading.....	III.
8675	Pearl, Oliver, and Henry P. Chandler.....	Design.	Spinning machinery.....	Design.
538	Pearsall, William L. & S. W.....	III.	Spittoon.....	III.
9001	Pease, James H.....	V.	Lamps, reflector.....	V.
8983	Peck, G. S.....	XIII.	Smut machine.....	XIII.
9077	Peck, Jesse.....	XV.	Mortar, mixing.....	XV.

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9101	Peer, John W.	Cordage machines.	III.
9346	Pemberton, Henry Pennock, Samuel & Morton, and Levi H. Davis. (See Davis & Pennock.)	Soda ash and carbonates of soda, making.	IV.
9210	Pepper, J. P., assignee. (See Benjamin Nott, assignor)		
9154	Perkins, G., and J. G. Bradeen, assignees. (See Bradeen, John G., assignor.)		
8692	Perkins, N., assignor to Samuel Dow	Buttons, cord, manufacturing	XXI.
9040	Perkins, Samuel M.	Coats, block for stretching.	XXI.
9040	Perley, Charles.	Ships' davits.	VII.
498	Perry, David, assignor to Franklin & J. W. Slaughter.	Cordage, machines for making.	III.
490	Perry, John S., assignor to Jagger, Treadwell, & Perry.	Stove, cooking	Design.
9155	Perry, John S., assignor to Jagger, Treadwell, & Perry.	Stove, cooking.	Design.
8925	Perry, Samuel M.	Car seats, railroad	X.
9059	Peters, Charles, and William Fetter.	Anvil.	II.
8859	Peters, John R., jr.	Flocks, machines for preparing.	III.
8707	Peterson, Richard, assignee. (See Beesley, Jacob, assignor.)	Bee hives, moth traps to	I.
9389	Phelps, E. W.	Axlefree arms.	X.
8693	Phillips, David	Steering submarine vessels.	VII.
8950	Phillips, L. D.		
8926	Platner, G. W., Elizur Smith, J. Holmes, & E. French, assignees. (See J. Holmes and E. French.)	Yoke, neck.	X.
9466	Plato, John T.	Fans, buckwheat.	I.
9277	Platt, Alfred	Ship's block.	VII.
9435	Platt, Charles H.		
9292	Plimpton, C. G., assignee. (See G. H. Richards, assignor.)	Grinding conical-edged knives, machinery for	II.
9466	Plimpton, James L.		
9277	Polhamus, John. (See Hubbard & Polhamus.)	Pumps, endless chain, buckets for	XI.
9435	Pollak, Morris. (See A. & M. Falkenaw and M. Pollak.)	Crayon rubber	XXVIII.
9292	Polley, Clark	Pill-making machines.	IV.
9292	Pond, Daniel F.	Leather, machines for polishing	XVI.
9292	Pond, Erasmus A.		
9292	Poole, John M., assignor to J. Pasey and James Scott.		
9292	Post, John. (See Ball & Post.)		

9035	Potts, Joseph	Meat cutters	XVII.
210	Powell, Archibald C., assignee. (See Caswell, John, assignor.) Powell, Joseph, Nelson Bartlow, and Edward Holden, assignors to Robert G. Eunson.	Planing, tonguing, and grooving, machines for	Reissue.
527	Pratt, David. (See Wager, Pratt, and Richmond.)	Grate, parlor	Design.
516	Pratt, Jos., assignor to Bowers, Pratt, & Co.	Stove, cooking	Design.
526	Pratt, Jos., assignor to Bowers, Pratt, & Co.	Stove, Franklin	Design.
529	Pratt, Samuel F., assignor to Jagger, Treadwell, & Perry	Stove, Franklin	Design.
433	Pratt, Samuel F., assignor to Jagger, Treadwell, & Perry	Stove, six-plate	Design.
8639	Pratt, Ulysses	Bleaching ivory, processes of	IV.
470	Pratt, William F., and George W. Bosworth	Stove, cooking	Design.
9278	Prosser, Richard, assignor to Thomas Prosser	Joint tube, application of a free, in circumstances where it is exposed to external pressure	II.
9220	Prosser, Thomas, assignee. (See Alfred Krupp.)	Rails, hand, machines for cutting	IX.
520	Pullinger, George B.	Stove, parlor	Design.
8560	Race, Washburn, assignor to H. C. Sisby, W. Race, and B. Holly	Buttons, studs, &c.	XXI.
8985	Rait, David	Wheels, cast-iron car	X.
9056	Rall, Daniel R.	Sugar, apparatus for boiling	IV.
9087	Ramos, Don Juan, assignor to James C. Gallaher and William F. Tirado	Sugar, processes for the manufacture of	IV.
9370	Randall, Charles	Planter, seed	I.
8641	Rapp, Adam William	Pens, gold	XVIII.
8640	Rauch, John H.	Pen and pencil cases	XVIII.
9201	Rawdon, Calvin L.	Yoke, neck, of horses	I.
9120	Reading, William	Corn shellers	I.
9457	Ream, Jacob L.	Harvesters, maize	I.
9036	Reany, Thomas	Ore stampers	II.
459	Rechten, Philip. (See Sonnenburg & Richien, assignors.)	Combs, ladies' hair	Design.
8960	Redheffer, William	Ovens	V.
9078	Reid, Thomas N.	Engines, locomotive	VI.
8790	Rensen, H. R., and P. M. Hutton	Planters, seed	I.
8694	Renwick, James, and others. (See J. R. St. John, assignor.)	Switches, railroad	X.
8984	Reynolds, Ira	Looms, power	III.
8677	Reynolds, Rensselaer	Nail machines	II.
8959	Reynolds, Samuel G.	Churns	I.
	Rhodes, Clarkson		

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
9358	Rice, Augustus M., assignor to A. M. Rice and S. H. Lombard.	Furnaces, hot air	V.
9266	Richards, G. H., assignor to C. G. Plimpton.	Forging machines	II.
9369	Richards, William T.	Ferrules, wire, manufacture of	II.
9262	Richards, William T.	Ferrules, wire, machinery employed in the manufacture of coiled.	II.
9433	Richardson, Fortunatus E.	Ploughs, construction of	I.
9188	Richardson, Samuel.	Looms for weaving piled fabrics.	III.
9360	Richmond, Apollon, assignor to A. C. Barstow & Co.	Furnaces, hot air	V.
473	Richmond, Apollon, assignor to A. C. Barstow & Co.	Grate, portable.	Design.
455	Richmond, Apollon, assignor to A. C. Barstow & Co.	Stove, cooking.	Design.
	Richmond, Volney. (See Wager, Pratt, & Richmond.)		
	Richmond, Volney. (See Wager, Richmond, & Smith.)		
	Richmond, Volney. (See Wager, Richmond, & Smith.)		
9409	Richter, Professor Adolphus	Drawing, perspective, apparatus.	XVIII.
9478	Rickelson, Lydoriann, administratrix of Henry H. Rickelson	Blubber, whale, machines for cutting	XXII.
8958	Rider, E. P.	Cotton batting	III.
8992	Rider, John	Gutta percha, processes of manufacturing	IV.
8708	Rietsch, Franz G.	Beer material concentrated	IV.
471	Ripley, Ezra, assignor to N. S. Vedder.	Stove, parlor.	Design.
531	Ripley, Ezra, and N. S. Vedder, assignors to Samuel McClure.	Stove, cook.	Design.
9102	Rippon, William	Doors, double acting.	IX.
9332	Robb, James	Plough-fastening devices.	I.
9333	Robb, James	Planters, seed	I.
9253	Robbins, Charles A., and Harvey Allen.	Mail bags, air-tight.	XVI.
9263	Robbins, Horace T.	Loom, shuttle guides to	III.
8807	Robbins, Horace T.	Spinning machinery, connecting washers with spindles in.	III.
9140	Roberts, Cyrus	Grain separators	I.
8746	Roberts, Peter	Capstans	VII.
9307	Robertson, William H.	Milling machines	II.
9103	Rogers, Enos	Valves, puppet, mode of grinding while the engine is in motion.	VI.
9488	Rogers, S. W.	Cut-off valve motion	VI.
9028	Rood, David, and Edwin Jenney, assignors to E. Jenney	Staves, machines for joining	IV.
9003	Root, Frederick P.	Cultivators, wheel	I.
	Root, F. H., and S. S. Jewett. (See Jewett, S. S., and F. H. Root.)		

Root, F. H., and S. S. Jewett. (See Jewett, S. S., and F. H. Root.)		Planters, seed.....	I.
Ross, E., and J. Houston. (See Houston & Ross.)		Furnaces for smelting iron ore, construction of.....	Reissue.
Ross, James P.....	9004	Mules, self-acting.....	III.
Roth, Augustus.....	214		
Rouse, Winton.....	9378	Stone, machines for rubbing.....	XV.
Roy & Wilcox, assignees of J. F. Flanders. (See Flanders.)		Cultivators, rotary.....	I.
Royse, Pleasant E.....	9142	Stone, machines for rubbing.....	XV.
Royse, Pleasant E.....	8747	Harvesters.....	I.
Royse, P. E., and Ira Reynolds.....	9104	Stoves, cooking.....	V.
Rugg, George H.....	9005	Gold beater, mechanical.....	II.
Ruggles, H. J.....	9436		
Ruggles, Robert B., and Lemuel W. Serrell, assignors to Robert B. Ruggles.....	8642	Printing presses.....	XVIII.
Ruggles, Stephen P.....	9410	Horse-power.....	XIII.
Russell, David.....	9-21	Legs, artificial.....	XX.
Russell, Jonathan.....	9202	Stove, cooking.....	V.
Saddler, Manly C.....	9371	Boot trees.....	XVI.
Sadlair, David.....	9425	Stove, parlor.....	Design.
Sailor, Samuel H., assignor to A. G. Abbott and A. Lawrence.....	522	Stove plates.....	Design.
Sailor, Samuel H., assignor to A. G. Abbott and A. Lawrence.....	525	Stove, cannon.....	Design.
Sailor, Samuel H., assignor to A. G. Abbott and A. Lawrence.....	523	Stove.....	Design.
Sailor, Samuel H., assignor to A. G. Abbott and A. Lawrence.....	524	Stoves, cooking.....	Design.
Sailor, Samuel H., assignor to North, Harrison, & Chase.....	453		
Sailsbury & Arrowsmith, assignees. (See B. W. Carpenter.)		Fire-escape ladders.....	XXII.
Salomon, John C. F.....	8867	Brick machines.....	XV.
Samuels, Jesse.....	8892	Planters, seed.....	I.
Sanders, Benjamin D.....	9006	Rakes, hay.....	I.
Sanders, Zenas.....	9007		
Sanderson & Vedder, assignors. (See Vedder & Sanderson.)		Stove, coal.....	Design.
Sanderson & Vedder, assignors. (See Vedder & Sanderson.)		Stove, dining room.....	Design.
Sanderson, W. L., assignor to R. R. Finch and R. R. Finch, jr.....	497		
Sanderson, William L., assignor to R. R. Finch, sr, and R. R. Finch, jr.....	466	Planters, seed, hand.....	I.
Sanford, Gelston.....	9037	Churning machines.....	I.
Sanford, Gelston, assignor to George A. Meacham.....	8927	Knitting machines, rotary.....	III.
Sanford, Horatio G.....	9434	Skates.....	XXII.
Sanford, Nathaniel C.....	9079	Punching sheets of metal, machinery for.....	V.
Sanford, S. T.....	8660	Lamps, spirit-gas, burners for.....	II.
Sargent, Rufus W.....	9324	Moulding in flasks, apparatus for.....	II.
Satterlee, Edward.....	8661	Planing metals, &c., mode of mounting the cutters of machines for.....	II
Saulnier, Pierre, assignor to J. T. Bruen.....	9504		

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
451	Savage, John J., assignor to A. Morrison and T. M. Tibbitts.	Stoves, cooking.....	Design.
8778	Savage, Simon.....	Printing floor-cloths, machines for.....	XVIII.
435	Savery, William.....	Stoves.....	Design.
8664	Sawyer, Joseph.....	Rattan, machines for splitting.....	XXII.
9038	Styles, M. T. (See Slocum & Sayles.)	Harvesters.....	I.
8748	Schnelly, William and Thomas.....	Weighing machines.....	XII.
8928	Schnibly, William and Thomas.....	Funnels.....	XI.
9189	Schneider, Christen.....	Bakers, railroad car.....	X.
9285	Schoenherr, John.....	Brick kilns.....	XV.
	Schroeder, Richard E.....		
	Scott, James, and J. Pasey, assignees. (See Poole, John M., assignor.)		
9121	Scoville, Hiram H.....	Wheels, cast-iron car.....	X.
226	Seaman, Eber C.....	Freezers, cream.....	Reissue.
9489	Seely, Jesse N.....	Potato diggers.....	I.
8665	Seitz, Frederick.....	Mashing maize, improved process of.....	IV.
8695	Seltz, Frederick.....	Mashing maize, process of.....	Add'l imp't.
8662	Simple, Amzi C.....	Windlasses.....	XII.
	Sennett, Jacob.....	Heddles, metallic.....	III.
	Sensitt, Jacob.....	Heddles, weavers'.....	Add'l imp't.
	Sensenick, George W. (See Byler & Sensenick.)		
9122	Sensenick, Isaac A.....	Bedstead fastenings.....	XVII.
9476	Seymour, William H., assignor to Seymour & Morgan.....	Harvesters, grain and grass.....	I.
9039	Sharp, James.....	Label cards.....	XVIII.
8779	Sharp, Theodore.....	Horse-powers, endless chain.....	XIII.
9308	Sharps, Christian.....	Fire-arms, method of priming.....	XIX.
8861	Shaw, Daniel.....	Smut machines.....	XIII.
8845	Shaw, William.....	Bedstead fastenings.....	XVII.
9203	Shaw, William.....	Bedstead fastenings.....	XVII.
9156	Shaw, William C.....	Morising machines.....	XIV.
	Shulton, Charles T., assignee. (See Albert Eames.)		
8661	Sherwood, Allen, and Avery Dabbett.....	Turning prisms, &c.....	XIV.
9190	Sherwood, Benjamin.....	Haus.....	XXI.
9390	Shetter, Solomon.....	Horse-shoe machinery.....	II.

8846	Sheward, James.....	Rat trap.....	XXII.
444	Shields, James.....	Combs, hair.....	Design.
424	Shimer, Sylvanus. (See George Hess.)	Stove, cooking.....	Design.
8760	Shuliz, Frederick, assignor to Wm. P. Cresson.....	Cut-offs.....	VI.
8760	Sickels, Frederick E.....	Clutches, friction.....	XIII.
8782	Sicke s, Gerard.....	Boring hubs, for boxes, apparatus for.....	XIV.
8761	Sidle, Henry.....	Lamps.....	V.
	Sidman and others. (See Conklin, Sidman, and Whritner.)	Looms for weaving piled fabrics without the figuring wires.....	III.
9157	Siedhof, Charles.....	Twisting tubes in the formation of roving.....	III.
8958	Sievier, Robert W.....	Process for restoring shape and tempering articles of hardened steel.	II.
	Silsby, H C, W. Race, and B. Holly, assignees. (See Washburn Race, assignor.)	Sewing machines.....	III.
9391	Silver, Harvey.....	Gauge float, feed regulator, &c., for steam boilers, &c.....	VII.
9237	Silvester, John.....	Screw-blanks, &c., wood, mechanism for gripping.....	II.
	Simmons & Palmer. (See Palmer and Simmons.)	Screws, &c., combination of cutters for threading wood.....	II.
8876	Singer, Isaac M.....	Screws, threading pointed wood.....	II.
	Skidmore, Charles. (See Blackman & Skidmore.)	Thermostat for regulating heat.....	V.
8912	Skinner, Chauncy D. (See Henry S. North and C. D. Skinner.)	Metal bars, machinery for crimping.....	II.
9222	Slaughter, Franklin and J. W., assignees. (See David Perry)	Bedsteads.....	XXVII.
9223	Sloan, Thomas J.....	Clasp, belt.....	XXI.
9116	Sloan, Thomas J.....	Parti-coloring yarn, apparatus for.....	Reissue.
9392	Sloan, Thomas J.....	Stove, cooking.....	Design.
9347	Slocum, G., and M. T. Sayles.....	Bits to braces, fastener of.....	II.
9080	Smend, Daniel W.....	Water-wheels, packing.....	XI.
217	Smith, Albert M.....	Stove, cooking.....	Design.
511	Smith, Alexander.....	Lathe machine.....	XIV.
9209	Smith, Elihu.....	Window frames.....	IX.
9335	Smith, Erasmus, assignor to David Maydole.....	Sash stopper and fastener.....	II.
480	Smith, Erasmus.....	Furnaces, slags, of utilizing.....	V.
	Smith, G., H. Brown, and Julius Holzer, assignor to North, Harrison, and Chase.		
9286	Smith, Henry C.....		
9309	Smith, Henry C.....		
	Smith, H. (See Wager, Richmond, and Smith.)		
	Smith, H. (See Wager, Richmond, and Smith.)		
	Smith, H. (See Wager, Richmond, and Smith.)		
9348	Smith, James D.....		
	Smith, James D.....		
	Smith, Jno. H. (See Fitzgerald and Smith.)		
9459	Smith, Rev. Wm. H.....		

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
8974	Smolinski, Joseph.	Cooking apparatus.	V.
9490	Snook, Thos., and S. Hill.	Lamps for locomotive engines.	V.
518	Snow, William M.	Stove plates.	Design.
8443	Snyder and Winslow, (See Winslow, J. F., and J. Snyder.) Sonnenburg, Albert, and Philip Rechten, assignors to Christian A. Haimkin.	Whaling apparatus, electric.	VIII.
8961	Soule, Charles R.	Rakes, bay.	I.
8929	Southwell, William.	Grinding or polishing saw-blades, &c., machinery for.	II.
9412	Southworth, D. H.	Serving mallets.	VII.
8393	Space, E. H., and L. J. Worden. (See Worden and Space.) Spaulding, H. C., and G. Suckney.	Pumps, rotary.	XI.
9237	Spear, A., and E. Marx.	Piano fortes, &c., sounding boards of.	XVIII.
9411	Speer, Cornelius.	Card-teeth, bracing and supporting.	III.
8729	Speiker, Charles F.	Gold, processes for dissolving.	II.
8780	Speissegger, S. L.	Brick machines.	XV.
103	Spence, Geo. S. G.	Hot-air furnaces.	Add'l imp't.
9204	Spence, Geo. S. G.	Furnaces, hot-air.	V.
9393	Spence, Geo. S. G.	Rauge, cooking.	V.
9473	Sprague, Harvey.	Plough regulators.	I.
8930	Spratt, James.	Lightning rods.	VIII.
209	Spring, Chas. A., and Peter Boon. St. John, Edgar. (See Curtis and St. John.)	Planing machines.	Reissue.
9003	St. John, John R.	Soap boilers.	IV.
8785	St. John, John R., assignor to Jas. Renwick, G. F. Barnard, and E. B. St. John.	Compasses for determining variation from local causes.	VIII.
9924	Stanley, Edwin.	Truck, railroad.	X.
8808	Stearns, Daniel.	Planing machines.	XIV.
9236	Stearns, Geo. S., and Wm. Hodgson.	Engine, steam, governor for.	VI.
8989	Stebbins, Peter, and Jno. Holmes.	Trip-hammers, vertical.	II.
9264	Stedman, Benj. S.	Port-monnaies, manufacture of.	XXI.
9126	Stephenson, Marcus R., assignor to Edwin Holman.	Locks, door.	II.
476	Stephen on, Peter.	Medallion of Daniel Webster.	Design.
496	Stephenson, Peter.	Medallion of Franklin Pierce.	Design.

495	Stephenson, Peter.....	Medallion of General Scott.....	Design.
8362	Stickney, G. and H. C. Spaulding. (See Spaulding and Stickney.)		
9456	Sullivan, J. D. B.....	Harpoon.....	II.
8331	Stoddard, William.....	Shingle machines.....	XIV.
9288	Stow, Orson W.....	Shingles, machines for jointing.....	XIV.
8913	Stowell, B. T.....	Tubes, sheet metal, machinery for forming.....	II.
8877	Stowell, B. T., and A. Marcellus.....	Cart, self-loading and dumping.....	X.
8762	Strait, Hiram.....	Planters, seed.....	I.
9081	Stran, Thomas V.....	Water-gun for extinguishing fires.....	XI.
9394	Strawbridge, Henry H., and Danl Tyson.....	Bells, method of ringing.....	XXII.
8763	Strode, Thomas T.....	Brick machines.....	XV.
8863	Stubbs, Matthew.....	Winnowers and weighers, grain.....	I.
8791	Surges, J. S.....	Eccentric, adjustable, mechanism for actuating an.....	VI.
	Summers, Wm. Alloff. (See Lamb and Summers.)	Rakes, hay.....	I.
8792	Swan, A. L.....	Melodions.....	XVIII.
9061	Swartz, David.....	Ploughs.....	I.
9143	Sweeney, Peter.....	Tuyeres, water-pipes of.....	II.
8727	Swett, James H.....	Crusher, quartz.....	XIII.
	Sweetland and others, assignees. (See Vedder and Sanderson.)		
9491	Swindell, John.....	Soda, chromate of, manufacture of.....	IV.
8914	Swingle, Alfred, and Nehemiah Hunt.....	Steering apparatus.....	VII.
9457	Switzer, Jacob W.....	Screw-drivers.....	II.
8996	Symmes, J. C.....	Shears.....	XXI.
8878	Taft, Geo. C.....	Boxes, opening, instrument for.....	XXII.
9435	Tainter, Daniel.....	Knitting machines, rotary.....	III.
8848	Taliaferro, N., and Wm. D. Cummings.....	Irons, smoothing.....	XVII.
	Tanner, Henry, assignee. (See L. F. Thompson and A. G. Batchelder.)		
8943	Tatham, Benjamin.....	Lead pipe machinery.....	II.
8710	Taylor, Henry D.....	Cars, railroad, running gear of.....	X.
8991	Taylor, Isaac.....	Engraving surfaces.....	XVIII.
8749	Taylor, J. C.....	Spoons for administering medicines.....	XX.
512	Taylor, Robt., and Robt. D. Laurie.....	Forks, spoons, &c.....	XVII.
8914	Taylor, Timothy H.....	Tables.....	XIV.
8930	Taymon, Benjamin J.....	Turning and polishing, machines for.....	
	Tenney <i>et al.</i> (See Bucks, Cragin, and Tenney.)		
9310	Terry, Silas P.....	Time pieces.....	VIII.
9349	Tukersberry, Geo. P.....	Life-preserving seat.....	VII.
8832	Thatcher, J. M.....	Stoves, air-heating.....	V.
	Thayer, B. B., assignee. (See Thomas Walker.)		

V.—*Alphabetical list of patents issued—Continued.*

No.	Patentees.	Inventions or discoveries.	Class.
8810	Thomas, Sam ^l T., and Edw ^d Everett.	Looms, jacquard, pattern cards for.....	III.
8809	Thomas, Wm. S.....	Cupping and breast glasses.....	XX.
8931	Thompson, Daniel H.....	Window-blind machinery.....	XIV.
8697	Thompson, James H.....	File-cutting machines.....	II.
8864	Thompson, John.....	Grain separators.....	I.
9354	Thompson, Julius.....	Blow-pipe for dentists, &c.....	XX.
9109	Thompson, L. F., & A. G. Bachelder, assignors to Henry Tanner	Brakes, railroad car.....	X.
8865	Thompson, Sardis.....	Boot jack.....	XVI.
461	Thomson, David, assignor to New Market Iron Foundry.....	Grate, portable.....	Design.
8847	Thomson, John.....	Wells, artesian, apparatus for boring.....	IX.
8975	Thurston, Stephen.....	Wheels, cast-iron car.....	X.
8951	Tibbetts, J. V.....	Umbrellas.....	XXI.
	Tilton, William B.....	Violins.....	Disclaimer.
8783	Tinker, Harris H.....	Suspender, encircling, for garments.....	XXI.
8666	Tolhurst, G. W.....	Planing machines.....	XIV.
9372	Townsend, Francis.....	Planters, seed.....	I.
9474	Trayser, Philip P.....	Spike machines.....	II.
9336	Trempor, John.....	Governors.....	VI.
9373	Trevitt, Constant S.....	Planters, seed.....	I.
9255	Tucker, Hiram.....	Marble, imitation of, preparing stone in.....	XV.
9507	Tucker, William.....	Looms, shuttles for.....	III.
8638	Turner, George William.....	Paper, making and sizing, machines for.....	III.
8915	Turner, Henry.....	Boxes for journals.....	X.
9144	Turner, James.....	Car coupling, railroad.....	X.
9123	Turner, Jonathan S.....	Clocks, alarm.....	VIII.
8811	Turton, William.....	Registers, hot air.....	V.
566	Tuttle, Charles B.....	Sieve, cooking.....	Design.
	Tyson, Daniel. (See H. H. Strawbridge and D. Tyson.)	Fulling mills.....	III.
9492	Underwood, William E.....	Planters, seed.....	I.
8366	Urmv, Jesse.....	Wheels, car, and rails.....	X.
	Valentine, E., and A. Bradway. (See A. Bradway.)		
	Valentine, E., and A. Bradway. (See Bradway & Valentine.)		
8867	Valentine, John.....		

9240	Valleau, Geo. (See Killam & Valleau.)	Electro-magnetic fire alarms.....	VIII.
8784	Van Ansdall, Henry.....	Lamps, camphine.....	V.
8879	Van Bunschoten, Isaac.....	Planters, seed.....	I.
8667	Van Doren, Francis.....	Harvesters, grain.....	IX.
8894	Van Fossen, Thomas.....	Gates, balance.....	III.
9401	Van Hoesen, William C.....	Looms, carpet.....	XXII.
9009	Van Riper, John A.....	Rat trap.....	Design.
519	Vedder, John J.....	Stove, cook.....	Design.
501	Vedder, N. S.....	Stove, cooking.....	Design.
510	Vedder, N. S.....	Stove, parlor.....	Design.
449	Vedder, N. S., and E. Ripley, assignors to Samuel McClure. (See Ripley & Vedder.)	Stoves, parlor.....	Design.
458	Vedder, N. S., assignee. (See Ezra Ripley, assignor.)	Stove, cook.....	Design.
8711	Vedder, N. S., and W. L. Sanderson, assignors to Warren, Sweetland, & Little.	Carriages, running gear of.....	X.
9374	Verleger, C. F.....	Planters, seed.....	I.
9082	Vermillion, Henry.....	Brick machines.....	XV.
8945	Ver Valen, R. A.....	Gold-beating machinery.....	II.
8668	Vine, William.....	Canal locks.....	IX.
464	Virdin, W. W.....	Stove, box.....	Design.
463	Vose, Samuel D.....	Stove, coal.....	Design.
500	Vose, Samuel D.....	Stove, cook.....	Design.
471	Vose, Samuel D.....	Stove, cooking.....	Design.
494	Vose, Samuel D.....	Stove, cooking.....	Design.
462	Vose, Samuel D.....	Stove, parlor.....	Design.
465	Vose, Samuel D.....	Stove, parlor cook.....	Design.
9010	Vredenburg, W. D. & F., assignees. (See J. Harvey Conklin.)	Grease cocks.....	VI.
437	Wade, Robert M.....	Stoves.....	Design.
532	Wager, Jas., David Pratt, and Volney Richmond.....	Stove, box.....	Design.
515	Wager, Jas., V. Richmond, and H. Smith.....	Stove, cooking.....	Design.
537	Wager, Jas., V. Richmond, and H. Smith.....	Hearth plate.....	Design.
9249	Wager, Richmond, & Smith.....	Omnibuses, registers for, and for other purposes.....	X.
8812	Wagner, J. Z. A.....	Brakes, railroad car.....	X.
9205	Walber, Thomas.....	Hat bodies, machines for forming.....	III.
9158	Walcott, Halsey D.....	Cloth and other substances, graduated cutters for.....	XXI.
9183	Walker, Alfred.....	Bedsteads, sofa.....	XVII.
9225	Walker, Andrew, jr.....	Boilers, apparatus for feeding.....	VI.

V.—Alphabetical list of patents issued—Continued.

No.	Patentees.	Inventions or discoveries.	Class.
9083	Walker & Willey, jr. (See Willey, Calvin, jr., assignor.)	Boot heels, revolving	XVI.
9493	Walker & Willey, jr. (See Willey, Calvin, jr., assignor.)	Furnace cinders, method of separating iron from	V.
9494	Walker, Thomas, assignor to B. B. Thayer, assignor to W. W. Churchill and Jos. Baxter.	ious, flat, steam	XVII.
9508	Walworth, Culeb C.	Screw blanks, rivets, &c., method of heading	II.
513	Ward, William E.	Range, cooking	Design.
9107	Wardwell, Benjamin, and Ephraim K. Barstow	Spings, pneumatic	X.
8813	Warre, Elijah	Inhaling powders, instruments for	XX.
	Warren, Ira		
	Warren, Sweetland, & Little, assignees. (See Vedder & Skender-son, assignors.)		
9024	Waterbury, Charles	Cars, railroad	X.
9509	Waterman, Henry	Boilers, steam, safety apparatus for	VI.
460	Waterman, Nathaniel	Towel stands	Design.
8669	Waters, John	Mattresses, spring	XVII.
9108	Watson, William	Planning machines	XIV.
9085	Webster, Daniel A.	Cocks, with pipes, connecting	XI.
8764	Weed, T. E.	Driers, grain	V.
8880	Weeks, George S.	Paddle wheel, oblique bucket	VII.
8636	Weiht, Joseph, assignor to Samuel Lawrence	Felting cloth	III.
8962	Welch, B. S.	Cements	IV.
	Welch, Henry K. W. (See Brown & Bigelow, assignors.)		
9375	Wells, David	Ventilators	V.
9475	Wells, Moses D.	Planters, seed	I.
8895	Wells, William T.	Tailors' measures	XXI.
9337	Welton, Arad W.	Buttons, glass	XXI.
517	Wheeler, John W., and O. B. Latham	Curb, pump	Design.
8712	Wheeler, Norman W.	Steering apparatus	VII.
	Wheeler, N., A. B. Wilson, A. Warren, and G. P. Woodruff, assignees. (See Allen B. Wilson.)		
479	Wheeler, Russell, and Stephen A. Bailey	Stove, cooking	Design.
9191	Whipple, Cullen	Screws, machinery for threading wood	II.

9477	Whipple, Cullen, assignor to New England Screw Company.....	Screw blanks, mechanism for pointing and threading, in the same machine.....	II.
9460	Whipple, Cullen, assignor to New England Screw Company.....	Screws, &c., wood, machinery for making.....	II.
9110	Whipple, Cullen, assignor to New England Screw Company.....	Screw-threading machinery.....	II.
8896	Whipple, R. B.....	Hame tugs.....	XVI.
8713	White, Ammi.....	Bridges.....	IX.
	White, Elbert, and John Bostwick, jr, assignee. (See Marshall & Cook.)		
8643	White, John L.....	Trucks for locomotives.....	X.
9256	White, Luther C.....	Lamp tops, rivets, &c., method of making.....	V.
8679	White, Norman. (See Kingsland, jr., and White.)		
9206	White, Robert.....	Blind, cast and wrought metal.....	II.
8881	Whitemarsh, Samuel.....	Calorifers.....	V.
	Whitney, Joel.....	Planing machines, feed apparatus for.....	XIV.
	Whitney, L. (See Barnum & Whitney.)		
8793	Wickersham, John B.....	Iron fences.....	II.
8728	Wicks, Edward.....	Planters, seed.....	I.
8946	Wicks, Robert, and James Faulkner, jr.....	Mash tuns.....	IV.
8897	Wilbar, Francis.....	Level, reflecting spirit and square.....	VIII.
9495	Wilder, Aretus.....	Planing machines.....	XIV.
8731	Willey, Calvin, jr., assignor to Calvin Willey, jr., and Urial Walker.....	Excavating and dredging machines.....	IX.
8907	Willey, Calvin, jr., assignor to Andrew J. Brown, of Chicago, and Robert L. Dunlap, of Dunlap's Prairie, Illinois, executors of the estate of Calvin Willey, jr., deceased, and Urial Walker.....	Gins for long staples of cotton.....	III.
9427	Williams, De Witt C.....	Whistle-tree.....	X.
8765	Williams, Orrellus T.....	Docks, floating.....	IX.
8766	Williams, Orrellus T.....	Vessels, apparatus for lightening.....	VII.
9207	Willoughby, James D.....	Curriers' beam and knife.....	XVI.
9062	Wilmot, S. R.....	Time-pieces.....	VIII.
9041	Wilson, Allen B., assignor to N. Wheeler, A. B. Wilson, A. Warren, and G. P. Woodruff.....	Sewing machines.....	III.
9124	Winger, Jacob G.....	Presses, cotton.....	XII.
9239	Winship, Ebenezer.....	Engines, steam, metallic stuffing-box, packing in.....	VI.
9510	Winslow, J. F., and J. Snyder.....	Chairs, railroad, machinery for making.....	IX.
9395	Winslow, Seth E.....	Fans, automatic.....	XVII.
9437	Wise, Jacob and Freeman.....	Stone and earthenware, manufacture of.....	XV.
9413	Wiswell, Daniel H.....	Car seats, railroad.....	X.
9355	Wolfe, Francis.....	Bags of paper, machine for making.....	XXII.
9396	Wood, A. H.....	Burners, gas.....	V.
8947	Woodbury, Nathaniel.....	Butter from firkins, implement for cutting.....	XVII.

V.—*Alphabetical list of patents issued*—Continued

No.	Patentees.	Inventions or discoveries.	Class.
8876	Woodcock, Demmon.	Staves, machines for joining.	XIV.
9042	Woodcock, Virgil.	Ores, machine for stamping.	II.
8844	Woodrow, David T., assignee. (See Hosea H. Huntley.)	Wheels, cast-iron car.	X.
9125	Woodruff, H. W.	Planters, seed.	I.
8794	Woodward, Joshua.	Plough.	I.
9138	Woodward, Joshua.	Brick machines.	XV.
9496	Woodworth, Arad, 3d, and Samuel Mowet.	Cloth on the beam, method of measuring.	III.
8932	Woodworth, William H.	Speaking tubes.	XVII.
8814	Woolcocks, Thomas J., and William Ostrander.	Stove doors, &c., hinges for.	V.
8699	Woolson, Charles J.	Burglar alarms.	XXII.
8849	Worden, L. J., and E. H. Space.	Candle-wicks.	I.
9458	Wortendyke, C. A.	Harvesters, reels for.	IV.
9043	Wright, W. W. & C. C.	Clutch, friction.	XIII.
	Wright, Wendell.		
	Whitner and others. (See Conklin, Sidman, & Whitner.)		
9497	Yale, Linus, jr.	Lock, safety.	II.
9350	Yale, Linus, jr.	Plates, burglar-proof, for doors, safe-walls, vaults, &c.	II.
9511	Yarnell, William.	Daguerreotyping.	XVIII.
9044	Yellott, George.	Harnes from horses, detaching.	XVI.
8833	Young, James.	Oil, paraffine, making.	IV.
472	Zeuner, Charles, assignor to M. Greenwood & Co.	Stand, hat and umbrella.	Design.
	Zoiner, Paul Wm. (See Harris & Zoiner.)		
	Zoiner & Harris. (See Harris & Zoiner.)		

VI.

INVENTIONS AND CLAIMS

FOR THE YEAR 1852.

No. 8622.—*Improvement in Ventilating Railroad Cars.*

What we claim as our invention, and desire to secure by letters patent, is the employment of the shaft, O, sliding boxes, g, and the springs, K; the whole operating in combination with the pulleys, R, T, in the manner and for the purpose herein set forth.

NOBLE P. BARNUM.
LEWELLYN WHITNEY.

No. 8623.—*Improvement in Carriage Hubs.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the conical bearing point, F, (fig. 2,) the female centre or step, D, the thimble, N, rollers, M, and flange, L, arranged in the manner substantially as described, and for the purpose set forth.

SAM'L P. BARRY.

No. 8624.—*Improvement in the Construction of Bridges.*

Having thus fully described my improved construction of bridges, what I claim therein as new, and which I desire to secure by letters patent, is the combination of the tension rods, e, connecting the foot of each strut with each end of the stretcher, substantially as described, by which an independent support is given to the strut carried back directly to the abutment, while at the same time no lateral force or strain is brought upon the abutment, as herein fully set forth.

WENDEL BOLLMAN.

No. 8625.—*Improvement in mode of Covering Cheeses.*

I claim as my invention, and desire to secure by letters patent, the spring cylinder with cleats, and open at the side, in combination with the framed stool, with circular opening, to admit and hold the cylinder within the sack while the cheese shall be passed through; all as herein described, and for the purposes stated.

UPSON BUSHNELL.

No. 8626.—*Improvement in Locks for Carriage Curtains.*

What I claim as my invention, and desire to secure by letters patent, is the constructing or manufacturing of coach curtain locks, each consisting of a polygonal knob, and an eyelet having a polygonal central aperture of corresponding form and size, so that at certain relative positions the knob head will pass freely through the eyelet, while in other relative positions the knob cannot pass through the eyelet, on account of the prominence of its angles.

I also claim attaching the knobs and eyelets to the articles which are to be thereby connected in such relative positions that the knob-head cannot be made to pass through the eyelet, either for the purpose of connecting or disconnecting, unless the eyelet or knob is turned from its ordinary and proper position; both the knob and eyelet being constructed in the manner and for the purpose herein described.

GEORGE COOK.

No. 8627.—*Machine for turning up the edges of Sheet Metal Disks.*

I do not claim as my invention the use of cylindric rollers, for either bending or beeding circular tin-plate, when held between and rotated by holders or grippers; but what I do claim is the employment of the spherical segmental bending roller, K, in connexion with the conic frustrum roller, a, to operate together, and so as to enable me either to turn down the flanch at a right, acute, or obtuse angle, all essentially as specified, and at the same time dispense with the necessity of having several sets of holders or grippers to bend the tin-plate against, as heretofore practised.

J. F. FLANDERS.

No. 8628.—*Improvement in Clover Harvesters.*

Having thus described my improvements in the clover-head harvester, what I claim therein as new, and desire to secure by letters patent, is the lateral projection, J, whose ends are fitted into the mortises, or recesses, K, in the shanks of the cutters, D, and whose upper front edges are made sharp; said projections serving the two-fold purpose of interlocking with the contiguous cutters and acting as cutters themselves, as described, for severing the heads from the stalks.

MAHLON GARRETSON.

No. 8629.—*Improved Steam and Water Gauge.*

What I claim herein as my invention, and desire to secure by letters patent, is the combination of the elevated glass syphon, containing a portion of air, above, with the metallic tubes, containing water, below, arranged with respect to each other, and the index, as herein described, for the purpose of showing or indicating the height of the water, and also the pressure of the steam, in steam-boilers, at an elevation above, or at the desired distance therefrom.

WM. E. GRIMES.

No. 8630.—*Improvement in Camphene Lamps.*

What I claim as my invention, and desire to secure by letters patent, is constructing lamps with a lever chamber, M, or equivalent receptacle thereto, such chamber or receptacle being connected with the reservoir near its top by a tube or passage, N, or other similar communication, substantially in the manner and for the purpose set forth.

R. V. DE GUINON.

No. 8631.—*Improvement in the manufacture of Railroad Chairs.*

What I claim as my invention, and desire to secure by letters patent, is rolling iron plates, for railroad chairs, upon rollers so constructed that the portions intended to form the lips of the chair shall have a greater thickness than the rest of the plate, substantially as herein set forth.

PETER P. R. HAYDEN.

No. 8632.—*Improvements in Iron Railings.*

I do not claim as my invention any of the parts of the within described railing, nor any of its minor combinations separately; but I do claim a combination consisting of the following enumerated parts, viz:

The top rail, with its notches and end hooks; the lower rail, with its notches, and hooks, and groove; the paling, with its notches, hooks, and T's; the ports, with their openings for the ends of the rails; and the key-bar, by which the rails, ports, and paling are firmly fastened together; the whole constructed and arranged substantially as herein described.

GEO. HESS.

No. 8633.—*Improvement in Daguerreotype Pictures.*

What I claim as my invention, and desire to secure by letters patent, is the contracted opening to the mercury bath, and the separating or raising the plate from the contractor during the operation of mercurializing; thus graduating the mercury upon the plate, producing the various tints, and gradually blending the outer edges of the gauge.

H. E. INSLEY.

No. 8634.—*Improvement in Wool-picking Machines.*

I do not claim any improvement in the feeding-table, ratchet feed roller, main picking cylinder, or any separate parts of the above described machinery. What I do claim as new, and as my invention, is the application and use of the comb-plate to the upper and forward edge of the shell, when combined with the compound shell, to hold the comb-plate as above described; the several parts thereof being combined for the purpose aforesaid.

And I claim the small recess just below the upper edge of the shell for the purpose described and set forth.

EDWARD KELLOGG.

No. 8635.—*Improvement in the construction of Shovels.*

What I claim as my invention, and desire to secure by letters patent, is an improvement in the construction of the common shovel, as follows, to wit:

First. The attachment of malleable iron, or other metal, consisting of the lip, the flange, and the socket, and the mode of fastening the same to the blade, as herein-before described.

Second. The mode of fastening the lower end of the stock of the handle, by means of a socket and single strap, with the ends deflected upwards, on the front and back side of the stock, and thus connecting the handle with the blade of the shovel.

Third. The construction of the upper end of the handle, consisting of the socket, the ribs, the cylinder, and the rivet; and the mode of connecting the same with the upper end of the stock, by means of the socket, as substantially and fully herein-before set forth.

HIRAM KIMBALL.

No. 8636.—*Improvements in Felting Cloth.*

Having thus described my improvements in the manufacture of felted fabrics, I shall state my claim as follows:

I do not claim the manufacture of felted cloth generally, nor do I claim the use of flat platens in felting cloth; but what I do claim, and desire to have secured to me by letters patent, is the felting of wool or other fibrous materials upon a woven or netted fabric, substantially as herein-above set forth.

And I also claim the use of one or more moving platens, having a reciprocating rectilinear motion, in the direction of the length of the cloth to be made, over one or more stationary platens, in combination with the endless cloth bands, operated substantially as described, for carrying forward and regulating the motion of the material while under the action of the said platens, substantially as set forth.

JOSEPH WEIGHT.

No. 8637.—*Improvement in Breech-loading Fire arms.*

What I claim as my invention, and desire to secure by letters patent, is mounting the barrel on a spindle attached to or projecting from the breech piece, so that the barrel can be turned thereon, to carry the bore to the side of the breech, for the insertion of a cartridge, and back, to close the bore against the breech-piece, substantially as herein described; but this I only claim in combination with the stationary breech piece, provided with a cutting edge at the side, to cut off the rear end of the cartridge, and with a projection at top, extending over the barrel and grooved transversely, to receive a lip from the barrel, to bind the barrel to the breech piece, to resist the force of the discharge, all as herein described.

RICHARD S. LAWRENCE.

No. 8638.—*Improvement in Feeding-rollers in Straw cutters.*

Having thus fully described my improved straw-cutter, what I claim therein as my invention, and for which I desire to secure letters patent,

is the enlargement of the knife-grooves, *n*, on the feeding cylinder, in the manner and for the purpose set forth.

NATHANIEL NUCKOLLS.

No. 8639.—*Improvement in processes of Bleaching Ivory.*

I do not claim the bleaching of ivory upon a frame exposed to the rays of the sun, passing through glass placed above the same; but what I do claim as my invention, and desire to secure by letters patent, is the improvement in the process of bleaching ivory, as set forth in the specification; that is to say, the raising up of one edge of the piece of ivory above the plane of the frame which supports it, and sustaining it in its place, in the manner described.

ULYSSES PRATT.

No. 8640.—*Improvement in Pen and Pencil Cases.*

I do not claim the extension case, as a sliding tube working in a case has been previously invented; neither do I claim a slide case for both pen and pencil, as that is at present in use. But what I claim as my invention, and desire to secure by letters patent, is the collar, *G*, encompassing and sliding freely on the pencil tube, *E*, said collar having a slot or recess (*g*) cut through it, as shown and described, through which a spur (*e*) of the pencil slide, *F*, may pass; by which arrangement either the pencil slide, *F*, or pen-holder, *H*, may be operated without interfering with each other; the collar being prevented from turning on the pencil tube, *E*, by means of the spur (*h*) working in the slot (*K*) in the sliding tube, *D*, and also by which arrangement I combine the extension case with the slide case, for both pen and pencil, substantially as set forth.

JOHN H. RAUCH.

No. 8641.—*Improvement in Gold Pens.*

What I claim as my invention and improvement in the gold pen, and desire to secure by letters patent, is reducing or thinning the sides of the pen at *a*, between the shoulder, *A*, and split, *c*; whereby the advantages above stated are fully attained, and the gold pen made to possess the qualities of the quill pen.

A. WM. RAPP.

No. 8642.—*Improved Mechanical Gold-beater.*

We do not claim the hammer, or the means of moving or actuating the same; neither do we claim the use of cams to move the mould. But what we desire to secure by letters patent of the United States, is—

First. We claim the arrangement and application of the vibrating fork, *g*, to take a definite amount of motion from the vibrating part, *g*¹, of the hammer, for the purposes and as described and shown.

Second. We claim lifting the "mould," or its equivalent, from the anvil, and simultaneously or subsequently turning the same, by competent mechanical means, substantially such as herein described, or their equiv-

alents; so that it is replaced with the slide that was previously on the anvil, exposed to the blows of the hammer.

Third. We claim the arm, n^1 , latch, 30, levers, o , and o^2 , chains, 33, and crank, o^3 , or their equivalents, in combination with a weighted arm or its equivalent, whereby a sudden partial rotation is given to the shaft, o^1 , and then the lever, o , is returned behind the latch, 30, for the purpose and as described.

Fourth. We claim, in combination, the lever, q , latch, 41, cranks, 35, frame, t , and links, 38, or their equivalents, whereby the "mould," or its equivalent, is lifted from the anvil, turned, and replaced as described.

Fifth. We claim the application of the rollers, 71, 72, 73, and 74, or other suitable mechanical means, set and moving at right angles with each other, and to the centre of the cam shaft, to take and communicate the motion given by a properly formed groove, or bead, in or on the face of the cam, H , to the mould, so as to place it in the proper position to receive the blows of the hammer, to beat each successive quarter of the mould, as described and shown.

Sixth. We claim moving the mould, or its equivalent, over areas of different size, by means of the same cam, through the agency of mechanical contrivances, substantially such as herein described, applied to the devices which transmit motion from the cam to the mould.

Seventh. We claim the arrangement of the slides, y y^1 , rollers, 68, forks, 70, with the cranks, w^2 , w^3 , and v , v^1 , and levers, w and x , to communicate the motion given by the cam, H , to the rollers, 71, 72, 73, and 74, to the "mould," through its frame, s , substantially as described and shown.

Eighth. We claim the adjustable fulcrum, 53, and slides, v^4 , in combination with the levers, w and x , for the purposes specified.

Ninth. We claim the parallel motion bars, u , and slotted bar, u^2 , in combination with the slots, 46 and 47, in the frame, s , whereby the "mould" and frame has a free motion, at the same time that it is kept parallel with the sides of the anvil, or the slotted bar, u^2 .

Tenth. We claim the arrangement of the forked springs, w^4 and x^1 , and pins 58, 59, and 62, 64, or their equivalents, as applied to the purpose of returning the "mould" to its central position, when commencing to beat each quarter of the "mould," as described and shown.

ROBERT B. RUGGLES.
LEMUEL W. SERRELL.

No. 8643.—*Improvement in Trucks for Locomotives.*

Having thus fully described my improved truck, what I claim therein as new, and which I desire to secure by letters patent, is the joint connecting the truck with the boiler, consisting of a long semi-cylindrical bearing, and an adjustable eccentric for putting the truck in line, substantially in the manner and for the purposes set forth.

JOHN L. WHITE.

No. 8644.—*Improvement in Cast Iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is casting a railroad car wheel, with a chilled rim and solid undivided

hub, connected by means of a plate, which is single and solid at certain parts, so that imaginary radial lines from hub to rim will pass through the said solid parts, and double, and bent in opposite directions, between the single and solid parts, and wholly or partly from hub to rim, substantially as specified; the whole constituting one casting, substantially as and for the purpose specified.

H. W. WOODRUFF.

No. 8645.—*Improvement in Ventilating Windows for Railroad Cars.*

But what I do claim as my invention, and desire to secure by letters patent, is the construction and arrangement of the windows of a car or carriage, in the manner and for the purpose set forth, by causing the parts of the window to stand at an angle outward, when closed, and opening inward to a line with the inside of the car, as described, whereby I insure ventilation, without the annoyance of dust, by means of the window alone, without the addition of other deflectors.

HENRY M. PAINE.

No. 8646.—*Improvement in Machine for Scouring Knives and Forks.*

I claim the construction of this machine, composed of two cylinder brushes, with their peripheries in contact, which causes the friction necessary for scouring or polishing, and at the same time keeps the cylinder brushes, which do the work of polishing or scouring, wet with the polishing substance continually, while the machine is in motion, by immersing the under side of said brushes in the liquid, as they revolve around on their axes, as above mentioned.

CHRISTOPHER AUMOCK.

No. 8647.—*Blind and Shutter Operator.*

What I claim therein as new, and desire to secure by letters patent, is the sliding extension rod, (*f, g,*) provided with the bent arm or hook, (*e,*) groove, (*i,*) notch, (*k,*) and tooth, (*j,*) as described, in combination with the staple, (*d,*) notch, (*l,*) and serrated neck, (*o,*) fitting into a corresponding socket in the plate, (*p,*) whereby the shutter or blind is opened or closed by manipulation from the inside, and retained in position, when opened, by the fallen bent arm in the staple, and, when closed, by the introduction of the bent arm into the notch, (*l;*) the serrated neck, (*o,*) with its corresponding socket in the plate, (*p,*) preventing the bent arm from being dislodged from either position by tampering from the outside.

JAMES R. CREIGHTON.

No. 8648.—*Improvement in Running Gear of Carriages.*

I do not claim the separate use of one segment on which the end of the perch rests; neither do I claim two pivots attached to the body. But what I do claim as my invention, and desire to secure by letters patent, is the placing the pivot in the rear of the forward axle, in combination with the two sets of segments or circles, viz: Segments A and segments D, seen at fig. 3, or their equivalents, substantially as above described.

GUSTAVUS L. HAUSSKNECHT.

No. 8649.—*Improvement in Apparatus for Cutting the pile of Piled Fabrics.*

What I claim as my invention, and desire to secure by letters patent, is the method of connecting the cutter (one or more) with the carrier by means of a joint, substantially as specified, in combination with the guide or feeler, (one or more,) substantially as specified, whereby the guide or feeler is carried down to determine the position of the cutter or cutters before it or they begin to cut, as described.

I also claim connecting the cutter or cutters, and the feeler or feelers, with the reciprocating carriage by means of a spring joint, substantially as specified, so that the tension of the spring, or its equivalent, shall draw the feeler or feelers against the range of loops to be cut, to insure the proper position of the cutter or cutters relatively to the range of loops to be cut, as specified.

And, finally, I claim the method of operating the cutters and guides or feelers towards and from the face of the cloth, and towards and from the lay, by connecting the ways on which the carriage runs, by arms, to the arms of a rock shaft, and to two inclined rocking joints, substantially as specified, whether the rock shaft be operated by the means specified, or the equivalents thereof.

JOHN JOHNSON.

No. 8650.—*Improvement in Lanterns.*

What I claim as my invention, and desire to secure by letters patent, is the combination of a lantern of any construction with the additional appendage herein described and set forth, for the purpose of adapting the same to be carried on the top of the fore-arm, and of keeping it in an upright position thereon. And this I claim whether said appendage be constructed in the particular form and manner set forth, or in any other manner whereby the same object is accomplished by substantially the same means.

PHILOS BLAKE.

No. 8651.—*Improvement in Ornamental Painting on Glass, &c.*

What I claim as my improvement in ornamenting surfaces, consists in combining with the process of painting and ornamenting by metallic foil, that of corrugating or crimping the foil so as to impart to the figure or figures a power of reflecting light, so as to produce the sparkling scintillated appearance, as specified.

JOHN W. BOWERS.

No. 8652.—*Improvement in Machines for Dressing Stone.*

What I claim as my invention, and desire to secure by letters patent, is making the upper surface of the ways elastic, substantially as described, in combination with the cutter carriage, constructed and operating in manner substantially as specified, and for the purpose described.

I also claim the manner, substantially as described, of mounting the stone carriage on wheeled axles, so that it can be elevated and depressed in

combination with the feeding platform running on ways, substantially as described, so that the carriage can be run on wheels to bring stones to, and remove them from, the machine, and be let down on the platform to receive the feed motion, as described.

And, finally, I claim the dogs jointed to, and in combination with, the jointed arms, substantially as described, so that, by means of wedges or their equivalents, the block of stone can be adjusted and secured in place, as described.

ALBERT EAMES.

No. 8653.—*Improvement in the Shakers of Winnowing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the method of moving the shaker fingers in the manner and for the purpose herein set forth.

HENRY FILBRUN.

No. 8654.—*Improved ornamental connexion of the parts of an Iron Fence.*

Having thus fully described my improvements in manufacturing fence, what I claim therein as new, and for which I desire letters patent, is connecting the parts of a wrought-iron fence to each other by casting iron ornaments upon them, for the purpose of ornamenting and fastening the parts together, substantially in the manner herein described.

HENRY JENKINS.

No. 8655.—*Improvements in Bevelling Planes.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The adjustable gauge bar, (D,) and the vertical adjustable guide, (C,) in combination with the double-faced plane-stock, all constructed and relatively arranged as herein described.

Second. The combination of the guard-screws, (E,) guard-stock, (F,) adjustable guard, (I,) gauge-bar, (D,) vertical guide, (C,) and plane-stock, (A;) the whole being constructed and arranged substantially in the manner and for the purpose herein set forth.

HARRISON W. LEWIS.

No. 8656.—*Improvement in Looms for Weaving Piled Fabrics.*

Having thus described my invention and improvement in the loom for weaving pile fabrics, I wish it to be understood that it is not my intention to claim the use of the figuring or pile wires upon which the loops or pile are raised. But what I do claim to have invented, and desire to secure by letters patent, is—

First. The employment on each side of the loom of a wing, constructed substantially as described, when mounted upon either end of the lay rock shaft, E, moving independent thereof, and of each other, and vibrating alternately with each other, in the arc of a circle scribed from the said rock shaft, F, and upon which are mounted the ways, I, of the pile or figuring wires, whereby the said wires are carried rearward

to be reinserted into the open shed, and thence forward to the last pick of the woof or weft, as described.

Second. I also claim causing the wings to recede to carry the wires to the open shed, and then advance frontward with the wire to the woven pile alternately by the action of the lay itself, each wing being locked to the lay, B, at the proper moment, and disengaged therefrom on the insertion of the wire by the action of the carved lever, L, as described.

Third. I likewise claim pivoting the ways, I, of each wing, and furnishing the inner ends thereof with arms, s, projecting into openings in the breast beam, C, whereby the ways, with the figuring wires, are made to maintain a horizontal position during the vibration of the wings in the arc of a circle, as described.

Fourth. I also claim providing each wing with a holding lever, Z², pivoted to the frame and vibrating with the motion of the wing, and locked by means of a spring plate, C², and pivoted arm, 5, actuated by the advance motion of the double arms, i, i, of the rock-shaft, h, when the wire is at rest in the warp, whereby the wing is retained steadily in its position until the withdrawal of the figuring wire.

Fifth. I also claim combining the intermediate sliding arm, O², horizontal rods, O⁴, with the carrier, n, and wire, w, whereby the middle of the latter is sustained and prevented from trembling whilst being inserted and withdrawn from the web, as described.

CHARLES A. MAXFIELD.

No. 8657.—*Improvement in Machines for making Sugar Candy.*

What I claim as my invention, and desire to secure by letters patent, is making candy by machinery, substantially as set forth.

BARTHOLOMEW O'BRIEN.

No. 8658.—*Improvement in Apparatus for attaching pieces of metal to each other by Castings.*

What I claim as my invention, and desire to secure by letters patent, is the use of movable jaws attached to the permanent parts of the flask, for the purpose of holding the steel pivots or bearings of levers and beams of platform-scales, and other analogous articles, *firmly* in the *exact* position required for use, while the fused iron, or other metal, is being poured into the mould, so as to fix them securely in the lever, &c, and so that the movable jaws will readily yield to the shrinkage of the metal while cooling, and prevent any injury from straining any of the parts, when the whole is constructed, arranged, and fitted to operate, substantially as herein described.

HORATIO B. OSGOOD.

No. 8659.—*Improvement in Buckwheat Fans.*

What I claim as my invention, and desire to secure by letters patent, is the method of separating the hulls from the kernels of buckwheat by shaking them on a table or tables made slightly concave and rough, substantially as specified, in combination with a current or currents of air blown over the surface of such table or tables to carry off the hulls,

whilst the kernels are retained or held back by the form of the surface of the table or tables, as specified.

ALFRED PLATT.

No. 8660.—*Improvement in Machinery for Punching Sheets of Metal.*

What I claim as my improvement is the combination of the hinged flaps, M, M, and their levers, N, N, restoring springs, and tripping studs, or equivalent mechanic contrivances, with the movable carriage, F, and the punching cylinders or mechanism; the whole being arranged and made to operate substantially as herein-before specified.

SAMUEL T. SANFORD.

No. 8661.—*Improvement in Apparatus for Moulding in Flasks.*

Having thus fully described the parts, and combination of parts, and operation of the moulding machine, what I claim therein as my invention, is the making of moulds in sand by the alternate motion of a sifter; sliding knife to cut off the sand when the flask is filled; press and movable bed, connected with, and worked by, the continuous motion of a single shaft, substantially as described in this specification.

I do not claim the sifter or press as my invention.

I also claim as my invention the moving, stopping, and starting of the bed to and from the points where the operation of sifting, filling, and pressing the sand is done, by the continuous rotary motion of a single shaft, substantially as described in this specification.

I also claim the method of striking the surplus sand from the top of the flask after the curb is removed, by means of a self-adjusting bar or knife, substantially as described and set forth in this specification.

EDWARD SATTERLEE.

No. 8662 — *Improvement in Metallic Heddles.*

What I claim as my invention, and desire to secure by letters patent, is casting the eye on the wire which constitutes the heddle, harness, or heald, through which the warp passes, in the manner and for the purpose set forth, producing a heddle much superior to any other known or used, and which will remove many of the difficulties heretofore experienced in the use of the common twisted wire heddle.

JACOB SENNEFF.

No. 8663.—*Improvement in Turning Prisms, &c.*

What we claim as our invention, and desire to secure by letters patent, is the prismatic lathe herein described, consisting essentially of a rotating cutting instrument, whose cutters in rotating combine to describe a figure whose longitudinal sections are counterparts of the outline of the longitudinal sections of the figure to be produced, and of a carriage to hold the block in such a position that its axis is always parallel with that of the cutting instrument, and at the same time to move it transversely to the same for the purpose described, and allow it to be turned on its axis

at pleasure and to be held from turning while being acted upon by the cutters.

ALLEN SHERWOOD.
AVERY BABBITT.

No. 8664.—*Improvement in Machines for splitting Ratan.*

Having thus fully described my invention, I will now state what I claim as new, and desire to secure by letters patent.

I claim the employment, in combination with the cutters for splitting off the strand, of feed rollers, or their equivalents, I, I, having grooves of the form of an angle or certain of the sides of a polygon, of which the edge or edges of the knife or knives form another side or other sides, substantially as and for the purpose herein described.

JOSEPH SAWYER.

No. 8665.—*Improved process of Mashing Maize.*

Now, what I claim as my invention and improvement in the brewing and distilling business, and desire to secure by letters patent, is the above specified preparation and boiling of the corn for brewing and distilling, boiling it to a jelly before the malt or rye is mashed into it, giving a much larger than the usual yield from cheaper material, by enabling me to use one-half to two thirds corn for beer, ale, and porter, and to make nineteen quarts of whiskey from sixty pounds of corn, (including the usual quantity of malt only, and no rye,) and twenty-one quarts with rye, as specified.

FRED'K SEITZ.

No. 8666.—*Improvement in Planing Machines.*

Having thus fully described my invention, I would state that I am aware that the stocks and cutters of planing machines have been made to yield upon an axle, the centre of which is in line with the cutting edge of the knife. This I do not claim. But what I do claim, and desire to secure by letters patent, is hanging the stock at a line above the edge of the cutter to a spring or weighted lever in the manner described, in combination with the resting of the front part of the stock upon a fixed surface, so that when the back part of the stock is made to rise, the whole stock is thrown forward and upward, thus keeping the edge of the cutter at the same level, notwithstanding the change in its angle with the bed.

G. W. TOLHURST.

No. 8667.—*Improvement in Grain Harvesters.*

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is constructing the reel with hinged or jointed slats, having teeth projecting from them, whereby the grain is more effectually collected, raised, and drawn into the action of the cutters, substantially as described.

I also claim the combination of the teeth with the sliding platform,

which teeth rise and fall at the desired time, alternately arresting and releasing the cut grain, whereby the reciprocating motion of the platform will keep the cut grain straight and constantly moving on the platform towards the trough, substantially as described.

THOS. VAN FOSSEN.

No. 8668.—*Improvement in Canal Locks.*

What I claim as my invention, and desire to secure by letters patent, is causing the weight of the descending boat to act as a supplying power to the higher level by the use of plungers or floats, (any number,) fitting in suitable chambers, provided with appropriate passages, and communicating with the higher and lower levels for operation, in the manner essentially as shown and described.

W. W. VIRDIN.

No. 8669.—*Improvement in Spring Mattresses.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the method herein described of securing the springs of spring mattresses to the frame and to each other, so as to leave the tops of the springs free to play or yield to any pressure, viz: by connecting them together by a riveted leather hinge, and allowing the longitudinal and cross pieces of the frame to pass through a slot in said leather hinges, the whole being combined and arranged in the manner and for the purpose set forth.

JOHN WATERS.

No. 8670.—*Improvement in Mill for grinding Quartz.*

Having thus described my mill for reducing gold quartz rocks to a powder or flour, what I claim as new, and desire to secure by letters patent, is the combination of the chilled hollow cylinder, R², and nut, S, of the form represented, and the grooved chilled rings, W, E², and horizontal circular channelled chilled ring plates, R, X, with the grooved concave, E, and runner, T, for breaking, pulverizing, and powdering gold quartz rock, the said chilled rings and plates being arranged and operating in the manner and for the purpose herein fully set forth.

H. BLASDELL.

No. 8671.—*Improvement in Churns.*

What I claim as my invention, and desire to secure by letters patent, is the application to dashers, for churns, of floats that shall close together at their appointed place when pressed downwards through the cream or milk through narrow spaces, and open again when raised from the bottom, claiming the right of composing the dasher of any materials, and in any combination of the above described parts, so as substantially to produce the same effects.

EDWIN B. CLEMENT.

No. 8672.—*Improvement in machines for Drilling Stone.*

Having thus described my improved drilling machine, I shall state my claim as follows :

What I claim as my invention, and desire to have secured to me by letters patent, is—

First. Driving the drill forward and back by adjustable wheels, between the edges of which the drill shaft is placed, substantially as above described.

Second. I claim turning the drill by placing said wheels at an angle to each other, substantially as herein-above described.

Third. I claim feeding the drill forward, as the hole is deepened by making the bearing surface of the wheels which drive the drill in of greater length than that of the other wheels.

HENRY GOULDING.

No. 8673 — *Improvement in Washing Machines.*

Having thus fully described the nature, construction, and operation of my improved washing machine, what I claim therein as new, and desire to secure by letters patent, is—

1. The method of hanging and operating the plunger by means of the shackles, (*f, f,*) and the heavy counterpoise handle, (*d,*) as described.

JOHN McLAUGHLIN.

No. 8674.—*Improvement in Hand Printing Presses.*

What I claim as my invention, and want to secure by letters patent, is the tympan plate of a printing hand press, removable by hinges and counterbalanced, together with the manner of holding the tympan plate in its position, (when lowered down,) for the purpose of its resisting effectually the pressure exercised from below, substantially as described.

HENRY MOESER.

No. 8675.—*Improvement in Spinning Machinery.*

The principle of our invention is also applicable to the warp throstle frame, and it is intended to apply to the open or leg flier, whose driving whirl is situated below its legs, and in such a flier we do not claim to arrange the whirl below the nose of the flier.

But what we do claim as our improvement, is the arrangement of the whirl at the base of the flier, in combination with making the said whirl, and the bearing on which the whirl is placed and rotates, with a passage through them large enough to allow the bobbin to play within the same, and up and down between the flier legs, substantially in manner and for the purpose as specified.

OLIVER PEARL.

HENRY P. CHANDLER.

No. 8676.—*Improvement in Self-sharpening Grindstone.*

What I claim as my invention, and desire to secure by letters patent, is the combination of a grindstone with a self-acting picker, by which the grindstone is sharpened by its motion or power, as herein described, or in any other manner, substantially the same.

JESSE PENNABECKER.

No. 8677.—*Improvement in Nail Machines.*

What I claim as my invention, and desire to secure by letters patent, in the making of wrought nails, is the employment of the cutter for cutting wedge-formed pieces from a previously rolled plate of equal, or nearly equal thickness, substantially as described, preparatory to, and in combination with the moulding dies, which receive the cut pieces by suitable conveying apparatus from the cutters, and mould them to the required form by pressure, substantially as specified, so as to give the form by spreading the metal between the dies instead of by elongation, as heretofore practised when making nails from cut blanks.

I also claim the vibrating cutter and the faces or dies for confining and compressing the nails arranged on both sides of the said cutter, substantially as described, when this is combined with the two stationary cutters, having a space between the two, through which the rod or plate of iron is fed, substantially as described.

S. G. REYNOLDS.

No. 8678.—*Improvement in Brick Kilns.*

Having thus fully described my improvement, what I claim therein as new, and for which I desire to secure letters patent, is forming air arches or openings in the kiln between the fire-beds, with lateral openings therein, through which a sufficient amount of air can be supplied equably to all parts of the fire-bed at the same time, substantially as herein described.

WILLIAM LINTON.

No. 8679.—*Improved cast and wrought metal Blind.*

I do not claim the combining cast and wrought iron; nor do I claim to be the first to have cast metal round cold metal and joining the same by that means. But what I do claim as new, and desire to secure by letters patent, is producing a new product or article of manufacture for shutters, doors, &c., whereby I am enabled to use wrought iron slats, and prevent the contraction of the metal, in cooling, from warping the same by casting the top, centre, and bottom plates separate and distinct from the side plates, and running the side plates to the slats and plates, substantially as herein set forth.

ROBERT WHITE.

No. 8680.—*Improvement in Piano Forte Action.*

I therefore claim in the *upright or piccolo piano-forte action*, the arrangement of the back catch lever, L, in *front* of the back catch, and so that the rear side of the bearer shall operate in connexion with the front side of the back catch.

GEORGE BROWN.

No. 8681.—*Improvement in Sand Paper Holder.*

Having thus fully described my invention, I shall state my claim as follows:

What I claim as my invention, and desire to have secured to me by letters patent, is the implement called the sand paper holder, constructed substantially as above described—that is, of two similar pieces of wood, with handles at the ends, the inner sides flat and the other sides rounded, joined together lengthwise by a hinge of cloth or leather, so that the flat sides can be brought together; the outer edges of the flat sides having small wire pins inserted in them, by which the sand-paper is held, and the two pieces being held together when closed by dowels in one of the flat sides entering corresponding holes in the other flat side.

AZEL H. COPELAND.

No. 8682 —*Improvement in Mill Spindles.*

Having thus fully described my invention, I claim—

First. Uniting the upper and lower parts of the spindle by means of the driving chuck or key, T, made substantially in the manner and for the purposes herein set forth.

Secondly. I do not claim the vibrating centre, L, separately; but I do claim it in combination with the driving chuck or key, T, and the method herein described of uniting the parts of the spindle.

EGBERT T. BUTLER.

No. 8683.—*Improvements in the Ring Spinner.*

What I claim as my invention, is the combination of the standard or projection, B, with the ring and traveller, substantially in manner and for the purpose of removing or loosening waste from the latter, as specified.

GEORGE H. DODGE.

No. 8684.—*Mechanism for operating the Relief Valve in partially condensing Engines.*

Having thus described the construction and operation of our invention, what we claim therein as new, and desire to secure by letters patent, is the arrangement and combination of the partial escape or relief valve, W², plate, Z, reciprocating lifting box, Y, connecting rod, I, crank lever, X, and rock shaft, T, whereby the said relief valve, W², is actuated simultaneously with the opening of either of the exhaust valves, and allowed to close again, as herein set forth.

WILLIAM FEW.

FRANCIS ARMSTRONG.

No. 8685.—*Improvement in Cooking Ranges*

Having thus described my improvement in cooking ranges, I shall state my claims as follows :

What I claim as my invention, and desire to have secured to me by letters patent, is the combination of the pipes, arranged with fire spaces between them, with the hot air flues and diving flues of the brick work on the back and side of the oven, by which hot air is circulated through the oven and back again to the chamber about the fire-pot, and so on continuously; this hot air being used either for baking or for heating the apartments of the house.

Second. I claim the use of swing doors, arranged one on each side of the front of the fire pot, serving for radiating surfaces in connexion with said front of the fire pot for roasting purposes, and to admit the cold air when opened, as herein-above described and set forth.

JOHN P. HAYES.

No. 8686.—*Improvement in Water Metres.*

What I claim as my invention, and desire to secure by letters patent, is combining with a cylindrical case, such as herein described, and provided with induction and eduction passages, and with a segmental stop and leather cap plate for packing, substantially as described, a series of hinged segmental pistons, hinged to arms projecting from a central shaft or hub, and hinged at about one-third of the distance from their inner ends, so that when thrown open their outer ends shall not bind against the inner periphery of the cylinder, and when closed to pass the segmental stop they shall be sustained by a rest projecting from the central shaft or its equivalent, having a space between them and the shaft and arms for the free flow of water or other fluid under the said pistons to admit of their closing freely; the whole being made and combined substantially in the manner and for the purpose specified.

SAMUEL HUSE.

No. 8687.—*Improved Nail-plate Feeder.*

What I claim as my invention, and wish to secure by letters patent, is—

First. The giving to the nail-plate an interrupted rotary motion, in the same direction, instead of the reciprocating partially rotating motion in opposite directions, usually given to said plate; and this I claim irrespective of the mechanical devices by which said motion is communicated.

Secondly. I claim the combination of the sectional cog-wheel, always moving in the same direction, with the cylindrical cog wheel, having irregular teeth working between guides, having a mouth piece, and with the springs and spring plate, or their equivalents, by means of which both an interrupted rotary and a rising and a falling motion is communicated to the nail plate.

Thirdly. I claim giving a continuous forward and an interrupted forward and backward motion to the nail plate, by means of the revolving shaft, screwed tube, cam, and guide pin, and nut, *w*, combined with each other substantially as herein described.

CALEB ISBISTER.

No. 8688.—*Improvement in Iron Railings.*

What I claim as my invention, and desire to secure by letters patent, is the method of constructing a self-adjusting and fastening fence, by forming the posts in two pieces, substantially such as herein described, making two sides of one part of the post, with mortises at the top and near the bottom for the reception of the rails and the other piece when in place, retaining them in position.

I claim the tongues, I, I, connecting the hollow cap, J, provided with a tongue, K, and groove, K, with the uprights or panels, o, o, said tongues passing between the rails, and with the cap, J, serving as a hook to sustain the uprights or panels.

BENJAMIN KRAFT.

No. 8689.—*Improvement in Railroad Switches.*

Having thus described the nature of my invention, what I claim, and desire to secure by letters patent, is placing the tumbler, figures 4 and 5, under the rails, L and K, in such a manner as to ease their movement, and when at rest operating as a brace or key to retain the rails in place.

ABRAHAM S. MILLER.

No. 8690.—*Improvements in Fire-Arms.*

Having thus described my improvement in fire-arms for loading at the breech, where the barrel is banded or secured to the stock, I wish it to be understood that I make no claim to being the original inventor of a fire arm or gun loaded at the breech, such as that patented in France to Mr. Tourrette, of Paris, on the 24th of November, 1834, described in "Brevets d'Invention, vol. 55," and in descriptions of other guns which are loaded at the breech, patented and unpatented; but what I do claim as new, and desire to secure by letters patent, is dividing the stock at the junction of the barrel and breech, and mounting the barrel, and that portion of the stock to which it is attached, with a sheath or case, upon a longitudinal bar or tongue projecting from the butt of the stock, as represented in the drawings, whereby the stock and barrel are allowed to have a movement from the breech for inserting the cartridge into the chamber thereof, and returned and locked by a catch to confine them together.

CHAS. V. NICKERSON.

No. 8691.—*Improvement in Shingle Machines.*

What I claim as my invention, and desire to secure by letters patent, is the application of the vibrating rod gauging the shingles. The shingle-blocks are laid on the bench, A, and are pressed against the vibrating rod, D, one end resting against the centre panel of the knife-sash, B; then, as the sash moves up and down, the shingles are cut off the block and finished at one stroke of the machine, while the block can be turned at leisure to suit the grain of the wood.

L. B. PARKER.

No. 8692.—*Improvements in Ships' Davits.*

I do not claim any of the separate parts themselves; but I do claim as new, and of my own invention, and desire to secure by letters patent of the United States, the application of the socket, *d*, on its hinge, *5*, in combination with the socket, *c*, and davit, *e*, for the purposes and as described and shown.

CHARLES PERLEY.

No. 8693.—*Improvement in Neck-Yokes.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is the combination of the washers, *C*, the swivels, *B* or *E*, bolt, *a*, and nut, *D*, with the ordinary neck-yoke, arranged in the manner and for the purpose herein set forth.

JOHN P. PLATO.

No. 8694.—*Improvement in Railroad Switches.*

I do not wish or intend to claim the placing or attaching of links, arms, or tumblers, under the switch rails or stay-bars, for the purpose of carrying them over; but what I do claim, and desire to secure by letters patent, is—

First. The attaching of the links or arms to the stay-bar or switch-rails and superstructure, for the purpose of holding the switch rails against the undue action of the levers, and securing them in a perfect and uniform motion when acted upon by the levers, also to act as a stay or lock which shall effectually hold and secure the switch rails in every position, substantially as set forth.

Second. I claim a combination of the pivoted levers, *B* and *B*¹, furnished with peculiar formed ways, *A*, with the operative shoe, *x*, so constructed and arranged that the switch-rails are moved upward, and laterally, in manner substantially as described.

IRA REYNOLDS.

No. 8695.—*Improvement in Windlasses.*

What I claim as my invention in the above described press, is winding the rope upon a screw with a concave score between the threads, that fits the rope and supports it in its proper form, thereby lessening the wear of the rope and its liability to be broken in the operation of pressing, when the said screw is made to work through a fixed nut so as to always draw the rope in the same position, substantially as described.

A. C. SEMPLE.

No. 8696.—*Improvement in Shears.*

What I claim as my invention, and desire to secure by letters patent, is making the pivot and the hole in one or both limbs in which it fits of such form, as exemplified at *O*, as to cause the edges of the blades to be drawn together sideways by the power applied in cutting, as herein fully set forth.

JNO. C. SYMMES.

No. 8697.—*Improvement in File-Cutting Machines.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The travelling and revolving elongated elliptical cam, I, in combination with the connecting rod, I², or its equivalent, communicating a varying amount of motion to the rock shaft, which motion is conveyed, through suitable mechanism, substantially such as is described, to the screw, by means of which a varying rate of travel is communicated to the chisel.

Second. The inclined plane, or its equivalent, in combination with the jointed chisel stock, or its equivalent, pressed against said plane by the spring, E², or its equivalent, substantially as described.

Third. The springs, or their equivalents, to press the axis of the stock into the scores in the sliding bar.

Fourth. The springs, or slide and springs, whether used separately or combined, to press the cross against the pillars, so that the file may remain upon the bed in that position in which it is placed by one stroke of the chisel until it is struck again, thereby dispensing with the roller heretofore used to press the file against the bed.

JAMES H. THOMPSON.

No. 8698.—*Improvements in Machines for making and sizing Paper.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The application of the endless wire web in combination with, and passing round, the cylinder, and taking the pulp up from the vat and carrying it forward, and submitting it to the action of the dandy roller and pneumatic trough, taking the place of the fixed wire web and endless felt in the cylinder machines now in use, and the wire web upon which the pulp flows in the above mentioned Fourdrinier's machines. I am aware that a somewhat similar combination is found in Millburn's machine, reported in the Repertory of Patent Inventions, 5th series, vol. 9, page 325, dispensing with the cylinder, D; but that I do not claim.

Second. I claim the method of passing the paper through a trough of size between two endless felts or other fabrics, as above described, thereby obtaining a perfect and uniform saturation of the paper, and protecting the paper from all injury during the process of sizing and pressing.

GEORGE WILLIAM TURNER.

No. 8699.—*Improvement in Burglar Alarms*

We do not claim the clock movement, as that is a well known and old invention; neither do we claim the lever, K, for the purpose of operating upon the pallet, F¹. But what we do claim as new, and desire to secure by letters patent, is the securing of the lever, K, after it has been moved by the button, M, so as to allow the pallets, F, F¹, to be acted upon by the escape-wheel, D; said lever, K, being secured by the end (*m*) of the lever, N, fitting in a groove or recess (*o*) in the end (*j*) of the lever, K, the end (*m*) being forced into the groove or recess (*o*) by the spring, (*n*), substantially as shown and described.

L. J. WORDEN.
E. H. SPACE.

No. 8700.—*Improvement in Hemp Brakes.*

What I claim as my invention, and desire to secure by letters patent, is making two or more breaking and cleaning cylinders with fixed rods at or near their peripheries, and radial plates made to slide radially, (or some of them fixed,) operated substantially as herein described, in the spaces between the rods, substantially as described—the two or more cylinders being geared together so as to turn with equal velocities, and so placed that in their rotation the rods and plates of one cylinder shall come opposite to those of the other cylinder, for the purpose and in the manner substantially as set forth.

And I also claim the combination of springs, substantially as described, with the sliding plates of the cylinder or cylinders, operated substantially as herein described, for the purpose of rendering the plates self adapting to the material introduced, and to insure its being properly griped and held, so as to admit of slipping without undue strain on the fibres, as described.

LEWIS S. CHICHESTER.

No. 8701.—*Improvement in Grass Burners.*

What I claim as my invention, and desire to secure by letters patent, is the application to the surface of the ground of flame for agricultural purposes, using for that purpose the above described machine, or any other substantially the same, which will, by heat, produce the intended effect.

JNO. A. CRAIG.

No. 8702.—*Improvement in Feeders for Planing-Mills.*

What I claim, and desire to secure by letters patent, is my above-described combination of a bed-piece with the springs, lever, connecting rod, arm, tumbler, and clicks, and its grooves, guides, and rack, with a movable platform, with the adjusting levers and ratchets for the production of a lateral traverse and lost motion, with its adjustable table, adjusted by springs, weights, screws, or other known means, with its head-wheels, rollers, vertical ratchets, and balance clicks, and of a frame with its pulley and half wheel for the purpose of delivering or receiving material thereon; the whole being constructed, combined, and operating as above set forth and described, and for the purposes mentioned.

JOHN CUMBERLAND.

No. 8703.—*Improvement in Street-Sewers.*

Having thus described the nature of my invention, and the manner in which it operates, what I claim as new, and desire to secure by letters patent, is the combination of the basin, C, placed at the bottom of the inclined drain, B, and at the side of the sewer, with a single man-hole so placed as to give access to both the basin and sewer.

WILLARD DAY.

No. 8704.—*Improved Door Spring.*

We do not claim the straight piece of steel for a spring as new; neither do we claim having the spring act most powerful when the door is closed

as new. What we do claim as new, and our invention or improvement, and desire to secure by letters patent, is the application and mechanical arrangement of a curve in connexion and combination with a spring and rollers, for the purpose of a door-spring, where power will be exerted more strongly when the door is closed than when open entirely or partially, as herein described.

HENRY HOCHSTRASSER.
ABRAHAM MASSON.

No. 8705.—*Improvement in Gas Purifying Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is purifying the gas by passing it through a mixture of equal measures of quick lime and of animal charcoal, in the same retort in which the gas is generated, but at a temperature so regulated that at the lowest point, or where the gas enters the composition, the mass is at a low red heat, and at the top, or where it leaves the composition, the heat is below redness, substantially in the manner herein set forth.

ABRAM LONGBOTTOM.

No. 8706.—*Improved method of keeping the Valves of Oscillating Engines upon their Seats.*

What I desire to secure by letters patent is: I claim the pressure plugs, 5, or their equivalents, acting against the caps, g, or their equivalents, in combination with the steam chest, G, valve, e¹, and valve seat or seats, e, vibrating with the steam cylinder; said plugs, 5, operating to keep the valve or valves on the seat or seats of the same, as described and shown.

EPH'M MORRIS.

No. 8707.—*Improvement in Axletree Arms.*

What I claim as my invention, and desire to secure by letters patent, is constructing metallic arms for axletrees with sockets and ribs, as herein set forth, so that the arm can be attached to the wooden stock or body of the axletree without the employment of the hoops, clips, and screw-bolts heretofore employed, even when the stock is as small as, or of less diameter than, the arm.

DAVID PHILIPS.

No. 8708.—*Improvement in Concentrated Beer Material.*

What I claim as my invention, and desire to secure by letters patent, is the new and useful preparation of matter herein described, termed "Zeilithoid."

FRANZ G. REITSCH.

No. 8709.—*Improvement in Ships' Blocks.*

What we claim as our invention, and desire to secure by letters patent, is the method of making ships' blocks, by placing the metal straps edge-

wise—that is, with its greatest breadth in the direction of the plane of the axis of the sheaves, and extending from the sides of the sheave to the outside of the cheeks, substantially as specified—when this is combined with the attachment of the cheeks, in segments, to the wide faces of the straps, substantially as specified.

And we also claim making the cheeks of ships' blocks in segments of a ring, substantially as specified, whereby the elongated form is obtained by simply turning in a common lathe, whilst apertures are left each side of the straps to give admission for cleaning and oiling, and for checking or stopping the sheave, as fully set forth above.

WILLIAM COLEMAN.

STEPHEN G. COLEMAN.

No. 8710.—*Improvement in Running Gear of Railroad Cars.*

I do not claim the grooved inclined wheels, J, J, fitting to the rails in the manner described; but what I do claim as my invention, and desire to secure by letters patent, is the lower truck or frame, G, G, H, H, supported upon the rails, and prevented from rising by grooved inclined wheels, J, J, J, J, fitting to the edge of the rails, and connected to the trucks and body of the car by series of links and rods, substantially such as are herein described and represented by O, P, P, M, M, N, N, K, K, and Q, S, S, R, R, T, T, operating for the purpose set forth.

And I also claim the forked guards, V, provided with elastic bands, l, l, and attached to the lower truck, G, G, H, H, so as to move up and down freely, but formed so as to take a firm bearing or rest on the front axle, or any stationary part of the front truck, when brought into contact with any obstruction, substantially as and for the purpose herein set forth.

HENRY DAVIS TAYLOR.

No. 8711.—*Improvement in Running Gear of Carriages.*

Having thus fully described my improved running gear for four-wheeled carriages, and the advantages attained by the same over all others, when the object is to turn in as small a space as possible, without running the fore wheels under the body of the carriage, what I claim as new therein, and desire to secure by letters patent, is the combination of the segment plate, c, and the perch, e, sliding therein, and connected with the axles as described, with the segment plate, h, forming a part of the perch, e, and the plate, i, attached to the perch-block of the body, and sliding on the plate, h, in connexion with the rods, a, a, by which the other parts are regulated and governed in their action, constituting an arrangement of running gear, constructed substantially as in the manner herein fully set forth and represented.

C. F. VERLEGER.

No. 8712.—*Improved Steering Apparatus.*

Having thus described my improved steering apparatus, what I claim therein as new, and desire to secure by letters patent, is the combination of fast and moving circular racks of different diameters, with correspond-

ing planet-wheels or pinions, connected together and actuated by the hand-wheel, as herein set forth.

NORMAN W. WHEELER.

No. 8713.—*Improvement in Bridges.*

Having thus described the whole construction of the bridge, I wish it to be understood that I do not claim *separately* as new the mode of constructing the stringers, by splicing and securing planks in the manner set forth and shown; nor yet do I claim separately the use of diagonal planking crossed in layers, as described; nor yet again do I claim by itself increasing the width of the roadway and other parts of the bridge at the ends; neither the *mere* employment of side guards or braces; as all these, or similar devices or applications, belong to common carpentry, or ordinary bridge building: they, however, are necessary details, or contain principles essential to the construction of my bridge, involving a combination having the effects and advantages specified. But what I do claim as my invention, and desire to secure by letters patent, is—

First. The *combination* of parts constructed and arranged as *described* in formation of a *wooden tubular suspension bridge*; that is, the several suspension stringers, D, D, of catenary form, and constructed and united in pieces, as explained, (the outer ends of the extreme stringers being locked, as represented in the back stays;) the stringers, H, H, and I, for construction thereto or thereon of the inclined roof made of diagonal planking; the roadway stringers, G, G, connected by suspension rods to D, D, and H, H; the direct arch, M, united by suspension rods, and further direct arch, N, bearing under the upper stringers, together with the transverse floor timbers and roadway; the bridge, thus constituted, being formed—that is its stringers, arches, and coverings—of short pieces of wood, united, and having their fibres running in appropriate directions, as shown; and the bridge being in form wider at its extremities, gradually narrowing towards the centre, by which combination and arrangement of parts, the tensile strength of the wood in the suspension stringers is fully employed, vertical and lateral vibration are reduced, the roof more than assists towards the support of its own weight, and the bridge may be extended over a considerable span.

Second. The *continuous* angular side guards, formed by fender raves, P P, inclined rafters, Q, Q, diagonal plank covering, R, R, and extensions of the transverse roadway timbers, O, O; the said side guards projecting most, and being of greatest extent, at the extremities of the bridge, gradually diminishing towards the centre; and the specified side guards serving not only as braces to reduce lateral motion, but as a covered roadway, and to break the effect of wind upon the structure.

AMMI WHITE.

No. 8714.—*Improvement in Shoe Brushes.*

I therefore claim as my invention the brush as constructed substantially as represented in figure 2, and as above described; that is to say, with its polishing and blacking bristles arranged essentially as exhibited in the said figure, and as above explained.

J. J. ADAMS.

No. 8715.—*Improvement in Watch-chain Swivels.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The making swivels with a *central* spring to operate at *both* its ends against the knuckles of the joints, and for closing the openings, substantially as described.

Second. In combination with the swivel so made, I claim the swivel joint, made substantially as described.

SAMUEL Y. D. ARROWSMITH.

No. 8716.—*Hose Coupling.*

I do not claim as my invention the clasp in its general form, or as made to spring, and used with a screw. I claim, and desire to secure by letters patent, the clasp of the *particular* form above described, having a part of one or *both ends* extended beyond both places of fastening, so as to extend the contracting pressure directly around the entire circumference of an inserted tube, [see drawing, fig. 1st, letter *a*,] which *extension* I claim as a new and useful improvement on all clasps or bands used for coupling hose with which I am acquainted.

ALBIGENCE W. CARY.

No. 8717.—*Improvement in Horse-power.*

Having thus described my improved horse-power, what I claim therein as especially new, and for which I solicit letters patent, is the method of regulating the motion by means of a brake, worked by a governor, constructed substantially as herein described, so as to operate the brake with a force which increases with the velocity of the machine, until the motion is checked, and then instantly release the brake, so that no unnecessary labor may be imposed upon the animals when working at the proper speed.

MARTIN HARRIS CORNELL.

No. 8718 — *Improvement in Mills for Grinding Quartz.*

What I claim as my invention, and desire to secure by letters patent, is the crushing and grinding mill herein described, consisting of a trough and one or more rotating wheels, the acting surfaces of both the wheels and trough being formed as herein set forth, so that the former will run in the latter without tendency to run over its edges, except as it may be influenced by centrifugal force.

I also claim the combination of a double-ridged wheel-rim with a trough of corresponding form, whereby the lumps of quartz, or other substance being ground, are grasped by the wheel in its rolling between the angular groove or furrow contained between the two ridges, and, being thus prevented from escaping laterally, are crushed upon the ridge of the trough, with much less force, and greater effect, than if the angular action of the ridges was counteracted by the embedding of the lumps to be crushed among smaller granular and pulverized particles, which is always the case when the concave or inner angle is below, and the convex or

outer angle above, which is the converse of the combination to which this claim refers.

I likewise claim the method of constructing the wheels of a crushing and grinding mill of removable sections, substantially in the manner and for the purpose herein set forth.

SMITH CRAM.

No. 8719.—*Improved method of Preventing Collisions on Railroads.*

What I claim as new and original, and desire to secure by letters patent, is the application of a sound gatherer, with an ear piece, to a locomotive engine, or train of cars, arranged substantially as above described; so that the engineer, or another, can ascertain by sound the approach of a locomotive or train in time to prevent collision.

THOS. A. DAVIS.

No. 8720.—*Improvement in Grain Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The combination of the grooved cam, M, and reciprocating lever, K, so arranged with each other as to give to the rake, while in the act of clearing the platform of grain, an increased rapidity of motion, as compared with its backward movement.

Second. Controlling the motion of the rake by means of the combined action of the band, I, ratchet, *i*, and lever, R, as set forth.

Third. The arrangement of the double eccentric, U, for equalizing the power of the spring, *m*, on the lever, K, in the manner described.

Fourth. Forming supports for the vibrating blade or sickle by the plates, *f, f, f*, in sections separate from the fingers, to prevent choking, as described and represented.

BYRON DENSMORE.

No. 8721.—*Improvement in Shovel Ploughs.*

Having now described my invention, I will state what I claim and desire to secure by letters patent. What I claim, therefore, is the use of the fulcrum pin, *d*, and adjusting arrangement of the pin, *e*², in combination with the beam and stock of a plough, for the purpose of regulating the dip of the plough-share, substantially as set forth.

JAMES H. FORMAN.

No. 8722.—*Improvement in Railroad Switches.*

I claim the system of levers, lock bolt, and springs arranged substantially as herein described, in such manner that the switches are always locked securely in the proper position for the direct passage of a train along the main track, unless intentionally unlocked and shifted as described, and, when shifted, are automatically returned to their position in the line of the main track and locked there as soon as the force by which they were shifted is withdrawn.

In combination with the above, I claim the system of jointed levers, wedge-blocks, sliding-bar dogs, dog-lever, and hook-ended bar, or their

equivalents, acting substantially as herein described, in such manner that the switch is shifted automatically to permit a train to pass from a branch of the main track, and is maintained in such position until the last car has passed off it, when it returns automatically to restore the continuity of the main track.

AMOS HODGE.

No. 8723.—*Improvement in Portable Shower Baths.*

Having now described my invention and its operation, I will proceed to state what I claim and desire to secure by letters patent:

What I claim, therefore, is the use of the box or tub for a portable shower-bath, made in two halves, in combination with the slide, C, leaves, D, D, &c., and slides, G, G, &c., substantially as set forth.

FERDINAND HOLM.

No. 8724.—*Improvement in Grain Harvesters.*

Having thus fully described my improvement, what I claim therein as new, and desire to secure by letters patent, is—

First. Sustaining the rack piece, D, in the manner set forth, by projecting a beam, C, from the frame above the grass and behind it, to which it is connected by the rods, E, as herein fully set forth.

And in combination therewith, I claim the shield plate, G, in connexion with the beam, C, for sustaining the rack piece, D, substantially in the manner and for the purpose above described.

WILLIAM F. KETCHUM.

No. 8725.—*Improvement in Apparatus for Regulating and Measuring the Flow of Gas.*

Having fully described my invention, I will proceed to state what I claim as new, and desire to secure by letters patent: I do not claim the indicating apparatus for showing the quantity of gas or fluid consumed in a given time; nor do I confine myself to the use of any particular mode of indicating it, as it may be performed in various ways; neither do I confine myself to the peculiar form of clock movement or mechanism for giving motion to the disk, F. But what I do claim is—

First. The employment, for the purpose of registering the flow of gases and fluids through an aperture, of a disk, F, receiving a constant rotary motion at a uniform speed, and giving motion to a wheel, J, in connexion with the indicating apparatus and the cock, B, or its equivalent, in the manner herein described, to wit: the wheel, J, being moved farther from or nearer to the centre of the disk, as the cock is opened or closed, so as to govern the speed of the wheel, and, consequently, the indicators, according to the area of the passage through which the gases or fluids are passing.

Second. The manner of stopping the clock movement when the cock or faucet is shut by the arm, q, on the spindle, O, being operated by the wheel, J, and the lever, p, substantially as herein shown.

Third. The manner of closing the valve, D, and shutting off the gas or fluid, when the clock is run down, by an arm, S, and spindle, r,

operated by a spring, *t*, and held back by a lever, *U*, stopped by suitable catches, and released by the unwinding of the main spring, substantially in the manner herein specified.

W. B. LEONARD.

No. 8726.—*Improvement in Governors.*

What I claim as new, and desire to secure by letters patent, is an incline, or inclines, between a hub and cylinder on a shaft, in combination with a resisting spring, or its equivalent, whereby the motion of the parts due to the compression of the spring, or its equivalent, by the inclines, produces motion to regulate the power in proportion to the resistance as described.

EPH'M. MORRIS.

No. 8727.—*Improvements in Quartz Crusher.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is in combination with a cylinder containing the quartz, &c., and rotating in one direction, for the purpose of loosening up the material to be ground or crushed, the curved arms arranged upon a shaft therein, rotating in a contrary direction, for the purpose of catching, carrying up, and throwing over the balls by which said material is ground or crushed; the whole being arranged and combined in the manner and for the purpose herein fully set forth.

JAMES H. SWETT.

No. 8728.—*Improvement in Seed Planters.*

I do not claim, *exclusively*, causing the distributing wheel (constructed with cogs or teeth as described) to enter the body of the hopper, as such has already been done. But what I do claim as my invention, and desire to secure by letters patent, is the employment of a slide, *D*, or its equivalent, through which the distributing wheel works, and that, by being movable, operates to avoid friction of the wheel upon the sides of the aperture, (communicating with the hopper,) as liable to be produced by the play of the shaft upon which the distributing wheel, *C*, is hung, essentially as herein represented and specified.

EDWARD WICKS.

No. 8729.—*Improvement in processes for Dissolving Gold.*

What I claim now as my invention, and desire to secure by letters patent, is the separating of gold from its ores, sands, or mixtures, in suitable apparatus, by the use of free chlorine gas, when absorbed by water alone, or by water in combination with an alkali or an alkaline, earthy or metallic chloride, containing an excess of chlorine, as set forth in the specification.

CHARLES F. SPICKER.

No. 8730.—*Improvement in Railroad Car Brakes.*

Having thus fully described the nature of my invention, and the construction and operation of its parts, what I claim as my invention, and desire to secure by letters patent, is the fixed and sliding rubbers upon the adjacent axles of a railroad car, in combination with the intermediate cog-wheels, the whole arranged and operating substantially as herein set forth.

BIRDSILL HOLLY.

No. 8731.—*Improvement in Excavating and Dredging Machines.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is—

First. So arranging the frame upon which the endless chain carrying the ploughs and buckets is supported and carried, as to allow said ploughs and buckets to work outside of the line of said frame, and thereby to sink to any desired depth without liability of the frame resting upon the bank to be removed, and limiting the depth to which the cutters may sink, as herein described.

Second. I claim so connecting the machinery for raising and lowering the frames carrying the ploughs and buckets with the driving power of the machine, that the buckets may be lowered automatically in such proportion to the motions of the other parts of the machine as the character of the bottom to be excavated may demand, in manner and for the purpose substantially as described.

CALVIN WILLEY, JR.

No. 8732.—*Improvement in construction of Grate Bars for Furnaces.*

Having thus described my improvement in the construction of bars of grates of furnaces, and the manner of arranging them, and the effect produced by the use of the same, what I claim as new and of my invention, and desire to secure by letters patent, is the form and construction of the grate bars for furnaces, having jogs, *a*, in the blade of the bar, *A*, extending from the lower line or edge of the bar up to the level of the lower line, *C*, of the extension through the fire front; thereby securing the advantage of having said grate bars held permanently in their required position by the said jogs touching each other, and at the same time leaving all that section of the openings above the jogs free for the admission of a poker between the bars to remove any solid matter produced from the combustion of the fuel.

FRANCIS ARMSTRONG.

No. 8733.—*Improvement in Pumps.*

What I claim as my invention, and desire to secure by letters patent, is the combination and arrangement of the two barrels, *A* and *B*, and the pistons, *E* and *F*, in such a manner that the water shall flow *down* through the lower barrel and *up* through the upper barrel, thereby enabling one piston to act in *descending*, and the other in *ascending*, for

the purpose of producing a constant flow of water, substantially in the manner herein described.

I also claim the peculiar construction of the lower piston, F, by which its valve allows the water to pass downward, and closes by its own weight, either with or without magnetizing, substantially in the manner and for the purpose herein described.

ABEL BARKER.

No. 8734.—*Improvement in Explosive Composition for Blasting Rocks.*

What I claim as my invention, and desire to secure by letters patent, is the explosive compound herein described; but I would have it understood that some of the materials mentioned as component parts in my improved explosive compound have been used before by pyrotechnists and others in the manufacture of various fireworks, and that as regards such use, I do not claim anything in my invention except so far as regards the combination I have given and for the purposes also mentioned.

The shape and material of the cartridge cases have nothing to do with my invention, they being optional with the party using them. I have only given drawings of and described what I have found to be the most convenient for the purpose.

EDWARD CALLOW.

No. 8735.—*Improvement in Fences.*

What I claim as my invention, and desire to secure by letters patent, is the construction of the posts in pairs, and their combination with the rails in such a manner as to render the fence strong and firm, by balancing the weight of the fence by its construction, as herein above described, upon each side, equally, of the centre of each pair of the posts, and securing at the same time the advantages of a straight fence, and of posts standing upon the surface and secured from decay.

I do not claim as my invention the construction of the posts, as herein above described, either singly or in pairs, but the combination of the advantages above mentioned, as substantially described in the specification, and as above claimed by me.

JOHN CARD.

No. 8736.—*Improvement in Railroad Gates.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the method herein described for balancing a railroad or other gate, viz: by means of a spring coiled around a stationary axis, to which it is attached by one end, the other end being attached to the disk, which forms the hub or centre of the gate turning on said axis, substantially as herein described.

I also claim the use of the rock shaft, E, provided with the cam ledges, C, and straight ledge, K, to be operated upon by the wheels of the passing train, and the cams, *i*, *d*, for winding up the chains which draw up the gate; the whole being arranged in the manner and for the purpose heren substantially set forth and shown.

EGBERT P. CARTER.

No. 8737.—*Improvement in Machinery for making Chains.*

Having thus described the construction and operation of my machine for making chains, I wish to be understood that I do not claim to be the original inventor of "the combination of the parts, movements, and operations, in one machine, which are required to make jack chains, by one process, from straight wire after it is cut off in suitable lengths to the finished chain;" nor do I claim "the stud pin with a recess in it as a mandrel, around which the bow of a link is bent, while the bow of another link is held in the recess, thereby forming a continuous chain;" nor do I claim "a partly revolving mandrel with a stud pin and nipper, and other appendages for bending the last bow of each link, as combined, used, and constituting part of a machine" already patented. But what I do claim as new and of my own invention, and desire to secure by letters patent, is—

First. The combination of the welding dies, R, R¹, with the swage, N, for welding or uniting the lapped ends of the link, and dropping the latter upon the suspending arm, S, the advance of the die, R, moving the link to the face of the swage, where the operation of welding is performed.

Second. Attaching the vibrating arm, S¹, to the bed w², of the die, R¹, and operating the same in such manner as to receive the finished link, and suspend the same in a position to be seated.

Third. The combination of the slide bar, V, turning lever, W, and cross bar, g², constructed and arranged as described and represented—the said bar, V, and lever, W, operating to turn and push the finished link into its seat.

Fourth. The link seat, C, attached to the lever, j, beneath the swage, N, for receiving the finished link from the suspending arm, S¹, and holding the same until the wire or rod for the succeeding link is fed into the finished link, cut off, bent, and ready to be welded.

Fifth. The employment of the curved holding lever, Z, attached to the lever, j, in combination with the pendant cam bars, 4 and 5, short pendant arm, 9, arm, Y, pin, 3, and spring bar, X, constructed, arranged, and operating as described, whereby the finished link is held in its seat and liberated therefrom simultaneously with the advance of the die, R, to finish the succeeding link.

Sixth. The combination of the spring bar, X, with the shear cutter, L, whereby the pendant cam bars, 4 and 5, are actuated through the pin, 3, and spring, 8, 8, to hold or relieve the arm, Z, from the seated link, as described and shown in the drawings.

Finally. I claim making the grooves, b, b, in the bed dies, J, J¹, slightly oblique to their faces, for the purpose of canting the ends of the rod or wire, so as to allow them to lap when bent by the levers, P, P, as described.

JOHN M. CRAWFORD.

No. 8738.—*Improvement in Bran Dusters.*

Having thus fully, clearly, and exactly described the nature, construction, and operation of my improvement in flour-bolting and bran-dusting machines, what I claim therein as new, and desire to secure by letters patent, are—

First. The arrangement of the vanes in the blast cylinder, substan-

tially as described in the specification, and illustrated by the diagram, fig. 6, whereby I attain a free escape for the blast, and effectually prevent the accumulation of flour within the blast cylinder, and thus keep the cylinder truly balanced on its shaft or axis.

Second. The insertion of vertical rows of beaters on each rib of the bolting cylinder, and on the vanes (No. 2) of the blast cylinder, from top to bottom, for the purpose of beating the offal at each successive rib and vane, and preparatory to each jet of blast, substantially as described.

LEWIS FAGAN.

No. 8739.—*Improvement in Bran Dusters.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement and combination of the several parts of a bolt or bran-duster, in such manner that the draught generated by the rotation of the beaters within the bolting screen shall act as a conveyor or elevator for the purpose of transferring the bran or meal from any portion of the mill to the bolting or dusting apparatus, and shall at the same time cool the bran or meal thus conveyed.

I also claim the scouring apparatus herein described, consisting of a series of pairs of toothed disks, arranged in vertical order above each other, at such distances apart as will admit of the free passage of the meal or bran between them alternately from the centre to the periphery between the disks of each pair, and from the periphery to the centre between the pairs of disks.

I likewise claim the method herein described of shielding the current of mixed air and meal or bran from the centrifugal action of the revolving disks by means of stationary diaphragms, arranged as herein set forth.

ABEL HILDRETH.

No. 8740.—*Improvement in Stop Motions of Looms.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The forked lever, *g*, and spring, *m*, constructed and arranged substantially as herein described, in combination with the grid (or pins, *i, i, i*), and slide, *b*, to release the slide when the weft is properly drawn across the grid, and to traverse it to stop the loom when the shuttle ceases to draw the weft across said grid.

Second. The spring, *q*, or its equivalent, to stop the prongs of the lever, *g*, and raise the catch, *n*, so as not to stop the loom when the shuttle is in the box at the opposite end; the parts being arranged substantially as herein described.

LORA B. HOIT.

No. 8741.—*Metre for Steam Boilers.*

I do not claim the special use of a plunger, piston or pistons, poppet valves, or well known cocks, the same being long known and used; but what I do claim as my invention, and desire to secure by letters patent, in constituting a new and useful improvement in the construction and operation of a fluid metre, is the means herein set forth for maintaining the feed to the boiler, &c, and the closing or cutting off the communication to and from the metre in case of accident, or from other causes,

arranged and operating for the purpose and with the intent substantially as described.

WILLIAM HENRY LINDSAY.

No. 8742.—*Improvement in Steam-Boilers.*

Having thus described my improvements in locomotive boilers, what I claim therein as new, and desire to secure by letters patent, is the contracted grate in the fire box, in combination with a supplementary chamber of combustion, supplied with air, and situated at a point intermediate between the fire box and smoke box, which is connected with the former and the latter by flues, in the manner substantially as herein described.

JAMES MILLHOLLAND.

No. 8743.—*Improvement in Grain and Grass Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is the manner of placing the toggle-joint purchase, fig. 4, (with the transverse acting joint, V,) upon the end of the cutter arm, fig. 3, to act in conjunction with the other machinery, giving it, as it were, a double purchase by hanging the sweep so that the arm of the crank will be horizontal or parallel with the toggle-joint when straight, and giving the cutters its double motion by acting above and below this line. When the crank or hand, O, is up, the purchase is at the upper end of the sweep; when half way down, it is at the lower end or joint, varying like a circular or screw power.

ROBERT T. OSGOOD.

No. 8744.—*Improvement in Feeding Apparatus for a Grain Thresher.*

What I claim as my invention, and desire to secure by letters patent, is the method herein described of preventing accidents to the feeder of a threshing machine by interposing between him and the cylinder a roller, or the equivalent thereof, which is arranged across the throat of the machine, and is supported and guided substantially in the manner and for the purposes herein set forth.

WM. R. PALMER.

No. 8745.—*Improvement in Banding Pulleys.*

What I claim as new, and desire to secure by letters patent, is so arranging the driving pulley B in reference to pulleys E and F, that the band passing over these pulleys is not only pressed with any desired force against the periphery of the driver, B, but is also pinched between the pulleys B E and B F, they operating upon the band as feed rollers, substantially in the manner herein described.

ROB'T W. PARKER.

No. 8746.—*Improvement in Capstans.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the following mechanical elements, viz: the vibra-

ting tumblers acted upon by hand spikes; the slide, D, with its racks; the cog-wheels, P and Q, the former formed also with the ratchet teeth; the ratchet wheel, G, and its hollow shaft; the pawls, M and N; the whole arranged within the base, B, and with respect to each other, and acting substantially as described.

PETER ROBERTS.

No. 8747.—*Improvement in Rotary Cultivators.*

What I do claim as my invention, and desire to secure by letters patent, is the construction of the teeth on the main or driving wheels of a chisel-formed bevel—that is to say, one face being a continuation of the line or plane of the radius of said wheel, while the other face is bevelled to meet it at an angle somewhat less than forty-five degrees, for the purpose of striking into and taking a firm hold of the ground, in the manner and for the purpose set forth.

PLEASANT E. ROYSE.

No. 8748.—*Improvement in Weighing Machines.*

What we claim as our invention, and desire to secure by letters patent, is the employment of the method or methods of securing the lever or levers connected with the platform by means of a stop or brake to hold the platform, substantially as described, when this is combined with the pendulous scale or balance, and the apparatus for registering the extent of motion of the said pendulous scale or balance, substantially as specified; by means of which combination we are enabled to register accurately the weight of bodies that roll, or slide, or are thrown on to the platform, and prevent the apparatus from registering, in addition to the actual weight, the momentum of the descending weight of the body to be weighed.

And, also, we claim the employment of the mechanism which registers the number of weighings, substantially as specified, when this is combined with the pendulous balance, or its equivalent, and its register for registering the sum of the weights weighed by the pendulous balance, substantially as described; whereby an accurate register is kept not only of the number of articles which have been weighed, but also of the whole weight of what has been weighed, as it is often important to ascertain not only the sum of the things weighed, but also the number of articles which make up that sum.

WM. SCHNEBLY.
THOS. SCHNEBLY.

No. 8749.—*Improvement in Spoons for administering Medicines.*

What I claim as my invention, and desire to secure by letters patent, is the particular construction of my spoon, with a sliding bottom, and a piston slide exactly fitting the cavity of the spoon, and the sliding rod so arranged that it may be slid in at the same moment that the slide tongue or bottom is drawn out, thereby quickly emptying the spoon of its contents.

I do not claim that my spoon should be a graduating or measuring spoon, but merely for administering medicines already graduated by the physician.

I claim, also, that my spoon will secure, from its arrangement, the advantage of preserving the teeth, and administering all the medicines graduated by the physician—a difficulty often experienced in treating children.

J. C. TAYLOR.

No. 8750.—*Improvement in Knitting Machines.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Releasing the hanging plates, *k*, from the lever, *Q*¹, by the inclined projections, *5*, as they are drawn up, so as to let the uprights, *m*, and lever, *U*, raise the locking bar.

Second. The combination of the catch, *n*, (fastened to the upright, *m*,) spring, *V*², lever, *U*, operated by the groove, *E*, in the cam, to raise the locking bar, so as to allow the slur to operate and depress the sinkers, to divide the loops and form the stitches, and to raise the lever, *Q*¹, so as to be caught by the lip, *4*, upon the plate, *k*, to lock down the locking bar.

TIMOTHY BAILEY.

No. 8751.—*Improvement in Cast-iron Car Wheels.*

What we claim as our invention, and desire to secure by letters patent, is the making of car wheels with double plates extending from the hub to the tread, the plate forming the face of the wheel to be slightly curved backwards, so that a section of it through the centre shall present a very flat arch, whose extremities abut against the rim of the wheel; the back plate, as it spreads from the hub, to be curved in the same direction as the front plate, but, as it approaches the tread, to be gradually depressed at equal intervals, till it meets the front plate—to be thus thrown into a fold or plait, forming two walls of a triangular cavity, of which the third side is made by the face-plate, and in this form to be continued till it meets and unites with the tread; the whole to be in the manner and form substantially as shown in the accompanying drawings.

A. G. BRISTOL.

J. C. JACKSON.

No. 8752.—*Duplex Eccentric Valve Motion.*

What I claim, and desire to secure by letters patent of the United States, is the employment of cogs on or to eccentric wheels, for giving motion to eccentrics, or their equivalents, on a second motion, in combination with the guards or framing attached to the clips or straps of the driving eccentric, and so formed and arranged as to unite both vibrating motions derived from the driving and driven eccentrics into one motion, for working the slide and other valves of steam engines, in the manner and for the purpose as specified.

JOHN J. G. COLLINS.

No. 8753.—*Improvement in Straw cutters.*

What I claim in the foregoing as new, and desire to secure by letters patent, is the method of cutting vegetable substances by a combined

chopping or percussive and shearing cut, produced by means of stationary knives at the mouths of the feeding troughs, moving knives carried on an oscillating lever, and revolving tappets, which actuate the oscillating lever as described.

A. B. EARLE.

No. 8754.—*Improvement in Endless Chain Horse Powers.*

Having thus fully explained my improvement and its purposes, what I claim as new, and desire to secure by letters patent of the United States, is the manner of constructing the converge gears, pinions, and pulleys of the endless chain horse-power, with their outer sides concave at their centres, sufficiently to receive their fastenings within the plane of the inner side of the arm spokes or faces of such of the gears and pulleys which, when confined upon one shaft and overreach, the other shaft may pass both shaft and fastening freely, the faces of the several couplings or shoulders upon the shafts, as also the ends of the shafts themselves, being in the same planes, and all the fittings and fastenings of shafts, gears, and pulleys agreeing with each other, for the purpose and in the manner substantially as described.

HORACE L. EMERY.

No. 8755.—*Improvement in Vessels for making Ink.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of and connecting together a series of vessels for manufacturing ink, in the manner and for the purposes herein set forth.

ALEXANDER HARRISON.

No. 8756.—*Improvement in the manufacture of Zinc White.*

What I claim as my invention, and desire to secure by letters patent, is the use of a porous or fibrous bag or receiving chamber, with porous sides or bottom, or an air tight chamber with a straining or porous bag, adapted to the inside thereof, and used in connexion either with a blowing or exhausting apparatus, so that the products of the distillation and oxygenation of zinc, or other volatile metals, may be separated from the accompanying air and gases, which latter will be forced or otherwise drawn through the pores of the cloth bag or chamber, and escape into the atmosphere.

S. T. JONES.

No. 8757.—*Improvement in Saw Mills.*

I do not claim the cannon carriage, as shown in the annexed drawing; but what I do claim, and desire to secure by letters patent, is simply and substantially raising the tail block, as above described, or in any other way substantially the same.

OLIVER B. JUDD.

No. 8758.—*Improvement in Heating Furnaces.*

Having thus fully described my improvement, what I claim therein, and desire to secure by letters patent, is arranging the fire plates

in the manner set forth, so as to render them movable, in combination with the inclined sides of the furnace.

I also claim the combination of the air-pipes passing through the furnace, with the rear flanch, D, and with the arrangement for revolving the gases within the furnace backward and upward, thence passing them off in front, as described, the cold air being brought to the outside of that part of the furnace and tubes against which the heat first impinges, thus protecting it, and rendering the parts more durable, and more equally distributing the heat.

EDMUND D. NORCROSS.

No. 8759.—*Improvement in Water Wheels.*

We do not claim a water guide, as described in the foregoing specification, composed of a scroll, or sections of scrolls, or arcs of circles, or sections of polygons, as concentric with the wheel, to direct the action and impulse of the water upon the concentric wheel, having its guiding surface between parallel planes, as the scroll, and not spiral, as the screw; but what we do claim is a water wheel, composed of a scroll, or section of scrolls, or arcs of circles, or sections of polygons, substantially as above described, in combination with a fixed internal guide or guides, made in manner substantially similar to the float or floats of the wheel, but with the direction in reverse, there being sufficient space between the outer extremities of the guide or guides and the inner extremity of the float or floats to allow the water to pass between them in all positions, the space between them being substantially on the disk of the wheel, thus causing the diving current of water to pass between the two in the direction of the wheel's motion, and act directly upon the inner face of the wheel, propelling the wheel in the same direction with the current; the water being discharged, nevertheless, at the extremity of the scroll, helix or arcs of circles, or sections of polygons, or either of which the wheel may be composed, in a direction opposite to that in which the wheel revolves.

J. B. NOTT.

WILLIAM S. KELLEY.

No. 8760.—*Improvement in Cut-Offs.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is operating the catch or hold, and liberating the valves of cut offs, on the movement to close, or return motion of the valve after it has been partially operated upon in opening, substantially in the manner as herein described, so as to leave as little of the catch to be operated to effect the liberation of the valve as may be desired to be accomplished on the return-movement, thus being enabled to liberate the valve and cut off the steam as near the first of the return-movement as may be desired.

FREDERICK E. SICKLES.

No. 8761.—*Improvement in apparatus for Boring Hubs for Boxes.*

What I claim as my invention, and desire to secure by letters patent, is the iron shaft, in two parts, with the socket and screw in the centre,

marked O, so as to increase or diminish the length of said shaft, and also to feed the bitts, as described, whereby a hub may be clamped, bored at both ends for the boxes, and removed from the machine without removing the cutters from the shaft, replacing them, or changing the ends of the hub or shaft.

HENRY SIDLE.

No. 8762.—*Improvement in Water Gun for extinguishing fire.*

What I claim as of my own invention in the fire gun, and wish to secure by letters patent of the United States, are—

First. The combination of the flange, cap, and guard, constructed and operating in a manner substantially as described.

Second. Constructing the barrel of the fire-gun of successive layers of sheet metal, and casting the breech, trunnion ring, and flange thereto, in manner substantially as described.

HIRAM STRAIGHT.

No. 8763.—*Improvement in Grain Winnowers and Weighers.*

Having thus described my improvement in the combined weighing and winnowing machine, what I claim therein as new, and desire to secure by letters patent, is combining a balance lever weigher with the lower portion of the winnowing machine, whereby the grain, when cleaned, is weighed, and removed therefrom by a portable receiver, as described and represented.

I also claim constructing the balance lever weigher as represented, and mounting the same upon pivots or knife-edge bearings, *p*, whereby its rearward projecting ends, *L*, are made to serve as ways or inclined planes, upon which is mounted a portable receiver, *O*, so as to balance the weigher, whilst its frontward ends are graduated and furnished with weights, *M*, by which the number of bushels weighed at each time may be indicated as described.

THOMAS T. STRODE.

No. 8764.—*Improvement in Grain Driers.*

First. I claim the centre hollow shaft, *B, B*, for the double purpose—first, of forming the support in the centre for the steam chambers and pans as described; and, second, of forming a passage for the steam to pass into each of the chambers for heating the machine.

Second. I claim, substantially as described, the arrangement of the air-chambers, *l, l*, between the steam chambers and pans, with openings in them for a thin blade of air to escape in a circle from the centre, at a right angle, or nearly so, with the main shaft, *B, B*, and the pipe extending through the machine, as shown, for supplying the chambers with air, operating substantially in the manner and for the purpose as herein set forth.

T. E. WEED.

No. 8765.—*Improvement in Floating Docks.*

Having thus described my dock, and the various uses to which it is applicable, I will state that I do not claim forcing air into a vessel im-

mersed or partly immersed in water, for the purpose of rendering it buoyant, or of admitting water for the purpose of allowing it to sink; but what I do claim as my invention, and desire to secure by letters patent, is so forming a cylindric or prismatic dock, as to perform the operation of elevating a vessel above the surface by combining the buoyancy obtained by injecting air into the cylinders, with the forced revolution of the cylinders on their axes while lying on the water, substantially as herein set forth.

Second. I also claim making the rigid, submerged elevator in such a manner as to be actuated by compressed air only so long as to get rid of the contained water, and to be freed from the interior pressure while sustaining its load above the surface of the water, whereby the liability to accident from the escape of air under high pressure is avoided, substantially as herein described.

Third. I also claim, in combination with a flexible tube for conveying injected air, the use of the revolving pipe directly connected therewith, whereby the pipe may be turned, as herein described, for varying the direction of the current of injected air by turning the flexible tube, as herein set forth.

Fourth. I also claim, in combination with the flexible tube for the injection of air, the opening in the bottom of the cylinder, and the vents in its top, whereby the dock is rendered buoyant while wholly immersed in water, and freed from interior pressure on rising to its maximum height on its surface, substantially as herein set forth.

Fifth. I also claim the double par-buckle, c , c^1 , or analogous turning apparatus, whether a rope or a chain with friction rollers in its links (fig. 6) be used for the purpose of turning the opposite elevators, (B , B^1), in opposite directions, for the purpose of raising the vessel above the water, in the manner substantially as herein set forth.

ORRILLUS T. WILLIAMS.

No. 8766.—*Improvement in apparatus for Lightening Vessels.*

What I claim as my invention, and desire to secure by letters patent, is the elevator formed by combining jointed frames of inflexible materials with flexible enclosures made air-tight above, and open below, when said jointed frames are so constructed as to attach themselves to the bottom of a vessel after being let down by its side, and the flexible enclosure so arranged as to admit of the injection and retention of air beneath it, for the purpose of buoying up the vessel, substantially as herein set forth.

Second. I also claim making jointed elevator frames in such a manner as to adjust themselves to the form of a vessel's sides, whereby the flexible enclosure for air is allowed to come in close contact with the outside of the vessel, in the manner and for the purposes herein set forth.

Third. I also claim, in combination with a flexible enclosure for retaining the air, the hook, D , upright or chain, C , brace, B , and stretcher, S , whereby the elevator is made capable of attaching itself to the vessel, and of raising the same without the necessity of passing a support beneath the keel, as herein set forth.

ORRILLUS T. WILLIAMS.

No. 8767.—*Improvement in Life Preservers.*

I claim as my own invention the sectional berth-bottoms, as represented by figures 2 and 3, and as minutely described above.

STEPHEN ALBRO.

No. 8768.—*Improved arrangement of Steam-Boilers.*

What I claim, therefore, as my invention, and desire to secure by letters patent, is the arrangement of the cylindrical boiler, having return flues therein, within the flue of the main boiler, in such manner that the front end of said cylindrical vessel extends over the fire-grates, and so that nearly its whole outer surface is exposed to the action of the flames, gases, &c., which, after their passage through the annular flue, proceed to the chimney through the small flues in said cylindrical vessel.

WM. BARNHILL.

No. 8769.—*Improvement in Grain Driers.*

What I claim as my invention, and wish to secure by letters patent, is the employment of an atmosphere of steam surrounding the article to be kiln-dried, and kept heated, substantially in the manner and for the purpose herein described.

HENRY G. BULKLEY.

No. 8770.—*Improvement in Omnibus Registers.*

What I claim as my invention, and desire to secure by letters patent, is the use of the ratchet wheel, E, and its pawl, or their equivalents, for the purpose, substantially as herein set forth, of preventing the possibility of giving a blow to the hammer by means of a recoil of the wheel, B.

I also claim the combination, substantially as herein described, of the toothed wheel, G, to which the dial plate, A², is affixed, with the notched cylinder, I, and click, H, whereby the dial plate, A², is impelled one notch at each revolution of the dial plate, A¹, for registering on the concealed dial plate, A², 24, or any number of fares marked on the dial plates, A and A¹, substantially as herein set forth.

F. O. DESCHAMPS.

No. 8771.—*Improvement in Chairs.*

What I claim as my invention, and desire to secure by letters patent, is the construction and application of a metallic combination to the back posts of chairs, so as to let the chairs take their natural motion of rocking backwards and forwards, while the metallic feet rest unmoved flat and square on the floor or carpet; or any other metallic affixion substantially the same, and which will produce the intended motion.

GEORGE O. DONNELL.

No. 8772.—*Improvement in Cast-iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is connecting the hub and rim of railroad wheels by curved parts, A, A,

having raised or projecting ribs, *a, a*, and *b, b*, of cyma form on their inner sides, extending also across the inside of the rim; the said ribs on each plate being placed opposite the middle of the spaces between those on the opposite plate, and each rib terminating in the opposite plate to that on which it stands.

ORSON MOULTON.

No. 8773.—*Improvement in Knitting Looms.*

Having now described the construction and operation of my improved knitting loom, I disclaim the invention of warp-machines; also the invention of needles, guides, sinkers, presser, and the actuating cams or cut wheels for racking the guide bar; the same having been used prior to my invention. But what I do claim, and desire to secure by letters patent, is—

First. I claim the relative motions of the needles, hooks, and presser, as combined to form the looped or knitted fabric, in combination with the stops or guards on the hook bar, to prevent the presser from coming in contact with the hooks; the whole being constructed and arranged substantially as herein set forth.

Second. I claim the combination of mechanism for regulating the take-up motion, according to the quantity of fabric formed, without varying the tension of the fabric, substantially as described.

W. HENSON.

No. 8774.—*Improvement in Cotton Presses.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement, herein described, of a vertical revolving press, with toggle joints, *h, h*, operated by the toothed racks, *I, I*, and fixed pinion, *J*, substantially as herein set forth.

LEWIS LEWIS.

No. 8775.—*Improvement in Plates of Trunk Locks.*

What I claim as new, and desire to secure by letters patent, is the guard, *C*, constructed and applied as described, by which the lock is prevented from being wrenched or torn off from the article to which it is attached, and by which the hasp, *E*, is prevented from being pried or twisted so as to be freed from the bolt, *F*, thus obviating the necessity of the ordinary back plate, substantially as set forth.

C. LIEBRICK.

No. 8776.—*Improvement in Blasting Rocks under Water.*

What I claim as my invention or discovery is the blasting of rocks under water, by placing the explosive charge or charges on or against the surface of the rock to be blasted, and using the surrounding water as the means of resistance to the explosion, substantially as herein specified.

BENJAMIN MAILLEFERT.

No. 8777.—*Improvements in Cast iron Car Wheels.*

What I claim as my improvement in railroad car wheels is the concave rings, C and D, formed and located as described, in combination with the spokes or braces, *a*, in the exterior ring, D, and the concavo-convex plate or partition, F, arranged and combined substantially as herein set forth.

HIRAM W. MOORE.

No. 8778.—*Improvement in Machines for Printing Floor Cloths.*

What I claim as my invention is as follows: that is to say, I claim the arrangement of the printing mechanism, the stamping-down mechanism, and the mechanism for advancing the piece or strip of cloth or of material to be printed and pressed or stamped—such arrangement being as exhibited in the drawings, and as above described.

And I also claim the combination of the lip bar or plate, *y*, the series of bent levers, *a*¹, *a*¹, &c., the slide bar, R¹ or S, and the bar, C¹, as made and operated substantially in manner and for the purpose of seizing the selvage edge of the cloth and moving the piece as described.

And I also claim the combination of mechanism for operating the coloring carriage, or imparting to it its back and forth movements, and necessary intervals of rest—the said combination consisting of the rotating shaft, O, with its circular disks, Q, R, and their projections, *i*, *k*, the four hook bars, *l*, *l*, *p*, *p*, together with the vibrating bars, *n*, *o*, as applied together, and operated substantially as specified.

SIMEON SAVAGE.

No. 8779.—*Improvement in Endless Chain Horse Power.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the bent links, *a*, *a*, the revolving drums, B, and the pinions, D, constructed and operating in the manner and for the purpose substantially as described.

THEODORE SHARP.

No. 8780.—*Improvement in Brick Machines.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the plate, L, of the travelling mould table, operating simultaneously on the rods, *d*, *d*, and pistons, *c*, *c*, in the moulds, *b*, *b*, in combination with the pressing plate, N, of a steam or other press, for the formation and delivery of brick, as substantially set forth.

SAM'L L. SPEISSEGER.

No. 8781.—*Improvement in Bridging Navigable Streams.*

What I claim as my invention, and desire to secure by letters patent, is the combination of canal, A, tunnel, B, bridge, and road, constructed and arranged substantially as above described.

BENJ'N F. LEE.

No. 8782.—*Improvement in Friction Clutches.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is—

First. The arrangement of the lever, C, and arms, d, d^1 , for operating the segments, E, E, substantially as shown and described, by which arrangement the segments are made to bind in the V collar, F, or be relieved from it as desired—the segments when bound in the collar remaining in that state, the points or pivots, e, e , having passed the line of pressure, unless acted upon by some extraneous force, as the moving of the vibrating slide, G.

Second. I claim, in combination with the arrangement of levers and arms, the V collar, F, and segments, E, E, said segments being adjusted by screw rods, h , and nuts, i , as set forth.

GERARD SICKLES.

No. 8783.—*Improved Encircling Suspender for Garments.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the spring or belt, a , with the straps, h, h , and the circular pads, k , fig. 7, for the purpose of sustaining garments upon the human body, arranged substantially as set forth in the above specification.

HARRIS H. TINKER.

No. 8784.—*Improvement in Camphene Lamps.*

What I desire to secure by letters patent, is—

First. I claim the application of a suitable elastic packing between the wick tube, 5, and air tube, 3, attached in any convenient manner, in camphene lamps, for the purposes and as described and shown.

Second. I claim the application of a suitable ring or chamber around the wick tube, to receive or conduct water or other fluid to the wick, so that the light is extinguished in case of accident, as described and shown.

ISAAC VAN BUNSCHOTEN.

No. 8785.—*Improvement in Compasses for determining Variation from local causes.*

I do not claim the invention of a new mariners' or surveyors' compass, because these improvements can, in most instances, be added to compasses already in use; but I do claim as new, and of my own discovery or invention and improvements, and desire to secure by letters patent of the United States, the application of satellite or auxiliary needles to the magnetic compass, such needles being prepared, applied, and adjusted in the manner and for the purposes as herein set forth, including any merely mechanical variations that shall be actual equivalents of the means employed, as described and shown herein, and substantially the same as applied by me, for the purposes herein set forth.

JOHN R. ST. JOHN.

No. 8786.—*Improvement in Flour Bolts.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is in combination with a series of graduated stationary bolting disks in separate chambers, the rotating brushes placed above said disks, and the sweeps in a chamber below them, for the purpose of separating the bran, first and second middlings, and the flour, and conveying the meal, &c., through the machine, and for avoiding the use of a bran-duster; the whole being arranged in the manner and for the purpose herein fully set forth.

SAMUEL COOK.

No. 8787.—*Improvement in the Water-gauge of Boilers, &c.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the glass index tube below the point at which the float-chamber is connected with the water in the boiler, the water-tube connecting with the boiler at some distance from the bottom of the latter, so that it is not liable to become obstructed; which renders the indications of the float certain, while the coolness and quietness of the water in the index tube leaves it transparent, so that the index can be seen clearly and conspicuously.

BENJAMIN CRAWFORD.

No. 8788.—*Improvement in Corn Shellers.*

What I claim as my invention, and desire to secure by letters patent, is the combination of stationary sectional spring shelling plates with a rotating sectional spring shelling disk, substantially in the manner herein set forth, the plates and disks having a wabbling or universal motion, caused by the constant varying of the space between them, to accommodate itself at the same time to ears of varying size and shape, by which means the cobs are less broken and more thoroughly stripped than in machines, as heretofore constructed, for shelling corn fed into them promiscuously and in mass.

WILLIAM LINSLEY.

No. 8789.—*Improvement in Canal-Lock Gates.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is—

First. The opening of the lower gates of a canal or river lock, outwards or down stream, in combination with the means described, or their equivalents, for operating them, for the double purpose of saving length in the lock chamber with the same walls, and for allowing the gates to be opened before the chamber is entirely empty, so that the escaping water may carry out with it the boat, raft, or other thing being passed through, with the least possible delay.

Second. I claim the stationary gate at the head of the lock, which forms, with the breast wall of the lock, with the top of which it is level, a recess or chamber, through which the lock chamber may be filled at any desired height above the bottom of the lock, and thus save length of lock-wall.

Third. I claim, in combination with the stationary gate, the sinking head gate, extending across the lock, and reaching down a little below the top of the stationary gate, when the gate is shut, and which sinks or slides into the recess formed in part by said stationary gate, and is on a level therewith when open, for passing boats, &c., for the purpose of saving in the length of the lock chamber an amount nearly equal to the width of the gate.

Fourth. I claim the so placing of an adjustable batten or water-strip on the bottom of a lock, that it may be operated upon by the pressure of the water within the lock chamber, and be forced up against the gate when prevented from being closed tight by an intervening substance, substantially in the manner herein set forth and described.

CHARLES NEER.

No. 8790.—*Improvement in Seed Planters.*

But what I do claim as my invention, and desire to secure by letters patent, is: I claim the peculiarly formed curved lips, or feeders, and longitudinal grooves, or channels, so constructed and tightly fitted to the cast box, L, as to prevent any grain from passing into the chamber, except what is forced through the grooves by the lips or feeders, substantially as set forth.

IRA REYNOLDS.

No. 8791.—*Improvement in Hay Rakes.*

I disclaim suspending the head, so that each tooth acts separately, and the platform, L. What I do claim as my improvement, and for which I desire to secure letters patent, is—

First. The arms projecting from the axle, in combination with the joint, F, for the purpose of adjusting the position of the teeth to the surface of rough or smooth land.

Second. Hanging the arms to the axle, by means of the standard, I, and connecting rod; and also raising and lowering the arms, as the teeth may require, by means of the pin and holes in the connecting rod and arms, at J.

JAY S. STURGES.

No. 8792.—*Improvement in Melodeons.*

What I now claim as my invention, and desire to secure by letters patent, is—

First. Constructing the air-receiving box of a melodeon or other keyed wind instrument of a similar nature, which is operated by an exhausting bellows or pump, with a vibrating or movable top, F, connected to it by wings or joints, c, c, which fold or bend, substantially in the manner described, towards the external air which acts upon them, whereby the external air acting upon said wings counteracts the inequality of the force exerted by the spring placed inside, to open or expand and enlarge the interior capacity of the box.

Second. The manner of hanging the treadle, L, for operating the bel-

lows, upon the two vibrating rods, M and N, attached to the floor, or to any object under the instrument, substantially as herein set forth.

A. L. SWAN.

No. 8793.—*Improvement in Iron Fences.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is so constructing the loops and mortises in the rails and posts of iron fences that, when in place, neither of them can be removed, using for this purpose single posts and rails, and neither bolts, wedges, keys, nor any other fastening, except what is afforded by the peculiar shape of the said loop and mortises; and this I claim, whether the same be constructed as herein described or by any other means essentially the same.

JOHN B. WICKERSHAM.

No. 8794.—*Improvement in Plough.*

Having thus fully described my weeding-plough, what I claim therein as new, and for which I desire to secure letters patent, is the plate, *e*, constructed, arranged, and combined with the plough, substantially in the manner and for the purpose set forth.

JOSHUA WOODWARD.

No. 8795.—*Improvement in the manufacture of Door Knobs.*

I claim, substantially as set forth in the above specification, in the manufacture of vitreous metal knobs and similar articles—

First. The application and use of a metal plug, to be entered into the socket, and fitting it; the plug passing up from or through the bottom of the mould, for the purpose of preventing the melted material from filling the socket during the pressing operations, and at the same time facilitating the centring and adjustment of the socket.

Second. I claim the invention of, and substitution in the place of pincers and polishing rods heretofore known, a polishing rod capable of polishing several knobs simultaneously and by one operation, substantially as above described.

BENJAMIN NOTT.

No. 8796.—*Improvement in Double Plane Irons.*

What I claim as my invention, and desire to secure by letters patent, is the new and improved mode of fastening and adjusting the cap to the iron by means of a projection and slot, forming a dovetail slide, giving new facilities for the operation; and also a level surface to the back of the iron. Also, the elongation of part of the width of the cap, and its occupying the place of a removed part of iron, giving the operator new facilities in nicely adjusting the cap to the edge of the iron, without removing it from the stock, the same as herein described, using for the purpose the aforesaid arrangements of parts, or any other substantially the same, and which will produce the same effect in like manner.

FORDYCE BEALS.

No. 8797.—*Improved Pressure Gauge.*

What I claim as my invention, and desire to secure by letters patent, is a closed pressure gauge, constructed substantially as herein described, so that equal increments of pressure will cause the indicating liquid to rise in the tube equal linear distances, or thereabouts, in combination with an adjustable scale, to indicate the degree of pressure, and a standard weight and blow off valve, by which the scale can from time to time be adjusted so as to give true indications of the pressure of the steam, substantially as herein set forth.

BENJ. CRAWFORD.

No. 8798 — *Improvement in Carpets.*

What I claim as my invention, or new or improved manufacture, is an ingrained plied printed carpet, made by a combination of the process of weaving in two or more plies, and ingraining the same, and subsequently printing the figure or figures on both sides of the same, as described; the discovery having been made by me that the plying process prevents the colors printed on one ply from penetrating the other ply, so as practically to injure its other surface to an extent which renders it unfit for the reception of colors, and use as a carpet, as hereinbefore stated—a great improvement in trade being the result of such.

THOMAS CROSSLEY.

No. 8799.—*Improvement in the construction of Grate Bars.*

What I claim as my invention, and desire to secure by letters patent, is the construction of grate bars for furnaces of clay, soapstone, or other refractory substance, for the purpose and in the manner herein specified.

F. P. DIMPFL.

No. 8800.—*Improvement in Sofa Bedsteads.*

Having thus fully described my improved sofa bedstead, what I claim therein as new, and for which I desire to secure letters patent, is—

First. The combining the back of the sofa with the seat, by means of sliding pivots, in the manner and for the purpose set forth.

I also claim the sliding table and washstand, in combination with the sofa, substantially in the manner and for the purpose set forth.

JNO. T. HAMMITT.

No. 8801.—*Improvement in Joints around Glass Tubes for Philosophical Apparatus.*

I claim the method used for promoting the drying or evaporating of the liquid matter from the packing, by drilling the holes, 1, 1, 2, 2, and 3, 3, in the barrel, A, A, the said holes being afterwards filled with solder.

I claim the method of making the joint, *x, x*, at the end of the tube, which is effected by the friction of the packing around the tube, B, which forces the end of the tube against the bottom of the bore, and produces

a joint, when the stuffing-box, F, is forced to its place, as herein mentioned and set forth.

A. B. LATTA.

No. 8802.—*Improvement in Shovel Ploughs.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the combination of the wing or half shovel plough and the adjustable scraper, arranged on different stocks, in the said beam, when said scraper is arranged on the land side, and rearward of the plough, and so that the grass, weeds, &c, shaved off by the scraper, will be thrown into the furrow made by the plough; the whole being arranged in the manner and specially for the purpose herein set forth and fully shown.

JAMES LATTIMER.

No. 8803.—*Improvement in Cotton Gins.*

I do not claim the use of a mote brush, D, in combination with gin saws, and the ordinary stripping brush, as I am aware that a cylindrical mote brush revolving in the same direction with mine has been used before; but what I do claim as new, and desire to secure by letters patent, is making the mote brush (revolving in the direction described) with wings, so as to act by a current of air, as well as by contact with the cotton on the teeth of the saws, substantially as herein set forth, in combination with the saws and grate.

THOMAS J. LAWS.

No. 8804.—*Improvement in the treatment of Hydro-sulphurets, and in manufacturing Carbonates and Sulphur Compounds.*

What I claim as my invention and improvement, and desire to secure by letters patent, is the manufacture of carbonate of barytes and strontia by processes as above described, and, in combination therewith, employing the sulphuretted hydrogen gas evolved in the aforesaid process for the producing of sulphur or sulphuric acid.

CHARLES LENNIG.

No. 8805.—*Improvement in Burners for Argand Lamp.*

What I claim as my invention in the within described lamp is arranging the grooved tube for adjusting the wick, inside of the wick and outside of the screw—that is, between the wick and the screw, and extending the pin from the wick holder, through the groove in the tube, into the score between the threads of the screw, thereby dispensing with the perforated tube heretofore used upon the outside of the wick, and leaving the wick open on the outside, so that the material to be burned may have free and unobstructed access around the wick.

AUSTIN OLCOTT.

No. 8806.—*Improvement in Machines for Cutting Screws on Rails and Posts of Bedsteads.*

I do not claim, of themselves only, reversible cutter heads, as such, or equivalent arrangements, have long been used—such as reversible cylinders, and similar devices; but what I do claim as my invention, and desire to secure by letters patent, is constructing the reversible cutter-heads, E and F, of arms placed at *right angles* to one another, and carrying reverse right and left hand cutters, *i, i*, and *k, k*, in *combination* with the eccentric snug, *g*, and flanch, *f*, of the screw spindle, C, for the purposes and advantages specified; all being constructed and operating as shown and described.

J. PARSONS OWEN.

No. 8807.—*Improvement in Connecting Washers with Spindles, in Spinning machinery.*

I therefore claim as my invention the spring, clasp, or holder, *a*, or its equivalent, either with or without teeth, in combination with the spindle, or as applied and used therewith, substantially in the manner and for the purpose of holding the washer, as specified.

HORACE T. ROBBINS.

No. 8808.—*Improvement in Planing Machines.*

What I claim as my invention, and desire to secure by letters patent, is constructing, arranging, and operating a reciprocating plane, which cuts off the shaving by its forward stroke, and feeds the board by its backward stroke, and the clamps and gripes, or stops, with which such a plane is connected, as herein described, so that the board is fed at the back stroke of the plane and planed at its forward stroke, a distance equal, or thereabouts, to the throw or stroke of the plane; whereby a greater length is planed by a given number of strokes of the plane than in reciprocating planes that feed themselves by their own motion, as heretofore constructed; and also the injurious shocks and strains are avoided, which, in those planes, are caused by the necessity of making the cut considerably shorter than the stroke.

DANIEL STEARNS.

No. 8809.—*Improvement in Cupping and Breast Glasses.*

What I claim as my invention, and desire to secure by letters patent, is the improved exhausting apparatus, herein described, for surgical and other purposes—said apparatus consisting of a combination of a tubular spring piston with a barrel, substantially as herein set forth.

WILLIAM S. THOMAS.

No. 8810.—*Improvement in Pattern-Cards for Jacquard Looms.*

What we claim, and desire to secure by letters patent, is the combination of the buttons with the metallic card, as described, the buttons being so riveted or attached to the card as to allow of their being turned, for

the purpose of closing or opening the holes to which they are respectively attached.

SAMUEL T. THOMAS.
EDWARD EVERETT.

No. 8811.—*Improvement in Hot-Air Registers.*

What I claim, and desire to secure by letters patent, is the crown-wheel, or section of a crown-wheel, in combination with the pinion-wheel, or section of wheel attached to the fans, as set forth.

WILLIAM TURTON.

No. 8812.—*Improvement in Railroad-Car Brakes.*

Therefore I claim as new, and desire to secure by letters patent of the United States—

First. I claim the arrangement of the followers, 3, 4, 5, and 6, with their brake blocks, 8, rods, *e* and *f*, and links, 9 and 10, whereby the power operating to separate the followers, 4 and 5, throws the brake blocks, 8, on to each side of each wheel, for the purposes and as described and shown.

Second. I claim the steam piston and rod, *i*, wedge, *k*, and nut, *n*, and screw, *o*, in combination with the brakes, 3, 4, 5, and 6, arranged and acting as described, whereby the said brakes can be actuated by steam from the locomotive, or by hand, as described.

THOS. WALBER.

No. 8813.—*Improvement in Instruments for inhaling Powders.*

What I claim as my invention, and desire to have secured to me by letters patent, is the instrument, above described, for inhaling powders, &c., into the throat and lungs—the said instrument consisting of a receiver, with holes in its bulb or end, covered by, and working loosely in, an exterior tube, which prevents any of the medicine from lodging in the mouth, substantially as above described.

IRA WARREN.

No. 8814.—*Improvement in Hinges for Stove-Doors, &c.*

What I claim as my invention, and wish to secure by letters patent, is the connecting and hanging of the door or doors upon the fronts of stoves or grates, so that they may be opened or closed without marring the beauty or affecting the convenience of the same, in either case, or exposing to view the hinges or inside of the door, as described.

CHARLES J. WOOLSON.

No. 8815.—*Improved arrangement in Jack-Chain machinery.*

What we claim as our invention, and desire to secure by letters patent, is the arrangement on the bed plate, A, of the nipping-jaw, G, the mandrel, E, and pin, F, with the turning lever, K, (furnished with pin, *f*.)

moving under the table, B, in the manner and for the purpose substantially as set forth and shown.

HICKFORD MARSHALL.
SETH S. COOK.

No. 8816.—*Improvement in Omnibus Step.*

What I claim as my invention, and desire to secure by letters patent, is the application of the inclined covering or protector to the outside of the omnibus-door, as described, to prevent persons from standing, lying, or sitting on the steps, in combination with the brush or broom secured to the bottom of the covering or protector, so as to open and shut therewith, for the purpose of cleansing the step or steps; each step, if more than one, requiring a brush or broom attached, together with a back board, to protect the inside of the step, as described.

JOSIAH ASHENFELDER.

No. 8817.—*Improvement in Shop-Awnings.*

What I do claim as my invention, and desire to secure by letters patent, is the method of protecting the awning by the construction and arrangement of the cylindrical sheathing (or covering) in combination with the slats, in the manner and for the purpose as herein described and fully set forth.

WM. H. BRAKEWELL.

No. 8818.—*Improvement in Machines for Stamping Ores.*

What I claim as my improvement is as follows: I claim the combination of the washing basin or contrivance, L, with the stamp-rod and its bearing, so as to operate in manner and for the purpose as specified.

I also claim the deflective plate in the entrance-spout or hopper, as combined with the same and the mortar and stamper, and used for the purpose as specified.

I also claim the improvement in the stamp-head, or the making of it with a greater stamping surface on one side of its axis of rotation than it has on the other; the same being for the purpose of preventing packing of the charge, as specified.

I also claim the mode of applying the stamp head to the stamp-rod, viz: by means of the circular arcs or curves of the sides of the universal dovetail connexion with the wedge key, as described.

WM. BALL.

No. 8819.—*Improvement in Ploughs.*

What I claim as my invention, and desire to secure by letters patent, is connecting the beam to the plough-irons by means of a pivot and stay-bolt, G, and adjustable standard, F', the whole being constructed and arranged as described, so that the front end of the beam can be set towards either side, or either extremity raised or lowered, without changing the height of the other, or both extremities raised simultaneously and equally or unequally, substantially as set forth.

E. BALL.

No. 8820.—*Improvement in Friction Primers for Cannon.*

I claim the combining with the discharging string and tube of the primer, a cylinder or plug of leather, (c,) or other like substance, inserted and secured in the upper end of the primer, and having the exploding string passing through it, as above set forth; the said plug or cylinder serving the purpose of a breech to confine the charge when exploded, as a protector of the sand paper and priming against the absorption of humidity, and as a bearing for the string to draw over when pulled.

WM. BALL.

No. 8821.—*Improvement in Machinery for Felting Cloth.*

What I claim as my invention, and desire to secure by letters patent, is the method, herein described, of hardening the bat by alternate steaming and jigging, substantially as herein set forth, whereby one section of the bat is jigged while an adjoining section is steamed preparatory to being jigged.

I also claim the process of steaming and jigging two or more bats simultaneously, whereby much labor and time are saved, and the texture of the cloth is improved.

I also claim constructing a machine for jigging felt-bats in such manner that it will subject successive portions of the bats to equal amounts of jigging, and then stop, whereby a greater uniformity of texture is secured in the cloth.

I also claim the arrangement of the steam-pipes and adjustages in the steam-chamber, substantially in the manner and for the purpose herein set forth.

GEO. G. BISHOP.

No. 8822.—*Improvement in Marine Signals.*

What I claim as my invention, and desire to secure by letters patent, is the employment, for signaling or indicating the course of a vessel, of two lights of different colors, attached to or hung in a cylinder or disk, which is capable of revolving on a fixed axis, so as to change the position of the lights; the position of either light relatively to the other being made to point the course in any manner, substantially as described.

THOMAS H. DODGE.

No. 8823.—*Improvement in Planing Machines.*

What I claim as my invention, and desire to secure by letters patent, is the reciprocating plane for scoring the face of the board transversely and reducing it to a uniform thickness, arranged substantially as herein described, in a compound frame which carries the plane back and forth across the board by a regular and positive motion, and back and forth lengthwise of the board by a motion dependent upon the reciprocal action of the board against the planes in one direction, and of springs against the frame in the opposite direction, substantially as herein set forth.

I also claim the method of smoothing the surface of boards or other lumber by plane-irons reciprocating endwise and operated in such manner that the tendency of one to draw the boards towards that side of the machine to which it is moving is counteracted in whole or in part by the tendency of one or more of the others to draw the board towards the opposite side of the machine, these several counter-tendencies being thus made to neutralize each other, substantially as described.

JOHN HOWARTH.

No. 8824.—*Improvement in Swingletrees.*

What I claim as my invention, and desire to secure by letters patent, is the flange, F, F, F', above set forth, wrought or cast, in combination with the ring, B, and link, C, for the purpose of forming attachments, substantially in the mode set forth above.

CHAS. HOWARD.

No. 8825.—*Improvements in Machines for making Cordage.*

What I claim as my invention, and desire to secure by letters patent, is the application of the fan, *j, k*, in combination with the pulleys, *f, h*, belt, *g*, gears, N, O, P, Q, and bobbin, M, as a drag or take up, as above described.

WM. JOSLIN.

No. 8826.—*Improvement in Flour-Packers.*

What I claim as my invention, and desire to secure by letters patent, in the above described machine for packing flour, is the friction roller clutch, constructed and arranged in the manner and for the purpose substantially as set forth.

NATHAN KINMAN.

No. 8827.—*Improvements in Smut Machines.*

What I claim as my invention, and desire to secure by letters patent, is the formation of a series of corrugated recesses within the periphery of the cylindrical casing of my improved smut machine, substantially of the forms represented in the drawings, when the said cylindrical casing is combined with a rotating beater, which has its beating surfaces, *a, a*, &c., arranged in positions which incline obliquely to the radii of the beater, for the purpose of throwing the smut and kernels of grain into the said series of corrugated recesses in such directions that they will, in entering and rebounding therefrom, be brought in contact with their entire surfaces, and thereby produce so great an amount of friction action as to break up the smut and white caps, and polish the kernels of grain without breaking the same.

T. H. McCRAY.

No. 8828.—*Improvement in Cracker Machines.*

What I claim, therefore, is the use of the bed plate resting upon or supported by springs or other equivalent devices, so that a yielding or re-

ceding action is obtained in the bed-plate while under the pressure of the cutters, or while the cutters are pressing down, for the purposes and in principle of construction and operation substantially as set forth.

JOHN McCOLLUM.

No. 8829.—*Improvement in manufacturing Artificial Teeth.*

What I claim as my invention, and desire to secure by letters patent, is the formation of an artificial tooth or teeth from spar, silex, clay, sand glass, or any materials used for the above purpose, into a suitable condition for the finishing furnace, by the simple operation of moulding, thereby avoiding the tedious and uncertain process of enamelling.

WM. S. McILHENNEY, M. D.

No. 8830.—*Improvements in Machine for Paging Books.*

Having now described my invention and its operations, I will proceed to state what I claim and desire to secure by letters patent. What I claim, therefore, is—

First. The use of the type plates, having channel ways and springs in their faces, and holes in them, corresponding to the ten subdivisions of their peripheries, and their inner circumferences divided into ten equal sides, in combination with a barrel having stop pins in its circumference for the type plates, and a changing plate attached thereto, and ratchet wheel, cap plate, and pawl and bent lever, for the purpose of operating a series of number plates, the said combination of parts being entirely distinct from any known mode of producing the same result, (that is counting,) which I lay no exclusive claim to, the principle being well known, and I therefore limit my claim to combination of parts, substantially as set forth.

Second. I claim the use of the rod, C, lever, E, inking-roller lever, J, and arm, I, in combination with the type-wheel, substantially for the purposes as set forth.

Third. I claim the use of the inking-roller frame and rod attached thereto, and rotating ink plate, in combination with the lever, J, slide, O, and type wheel and levers operating the same, substantially for the purposes as set forth.

Fourth. I claim the bed, R, with guides attached thereto, in combination with the table and type-wheel, substantially for the purposes as set forth.

S. E. PARRISH.

No. 8831.—*Improvement in Machines for jointing Shingles.*

Having thus described my improvements in shingle machines, I shall state my claim as follows:

What I claim as my invention, and desire to have secured to me by letters patent, is the arrangement of the horizontal sliding boxes which carry the jointing knives, by which they will cut the edges of any width of shingle; the shingle itself operating the devices for holding the boxes firmly, and in the proper position, while the shingle is being cut, as hereinabove set forth.

WILIAM STODDARD.

No. 8832.—*Improvement in Air-Heating Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the inverted domes, or frustrums, F, I, M, and plate, P, with the short tubes, *b, b, f, f, i, i, l, l*, connecting them, substantially in the manner herein described, for the purpose of effecting the connexion between the lower ends of the fire or draught flues, and carrying the air through them to the spaces between the cylinders or tubes.

J. M. THATCHER.

No. 8833.—*Improvement in making Paraffine Oil.*

What I claim as my invention, and desire to secure by letters patent, is the obtaining of paraffine oil, or an oil containing paraffine, and paraffine, from bituminous coals, by treating them in manner hereinbefore described.

JAMES YOUNG.

No. 8834.—*Improvement in Sausage Stuffers.*

Having thus described my improved sausage stuffer, what I claim therein, and desire to secure by letters patent, is the combination of the three-cornered ovoid-shaped cylinder, D, with the curved spring scraper, G, operating in the manner and for the purpose substantially as herein fully set forth.

THOS. W. BAILEY.

No. 8835.—*Improvement in Mill for Grinding Ores.*

What I claim as my invention is the combination and arrangement of the two grinding or pulverizing wheels, one or two endless screws, and the troughs which such wheels and screw or screws revolve in, all made and applied so as to operate together in such manner as to raise the ore up and crush it between the two wheels, and not only return or move the heavier or too weighty particles towards or back to the wheels, but allow the lighter ones, or sufficiently reduced particles, to flow out of the machine, as described.

WM. BALL.

No. 8836.—*Improvements in Excavating Machines.*

I do not claim inclining the cutter cylinder; neither do I claim placing the horses within or upon ditching machines for the purpose of working them. But what I claim, and desire to secure by letters patent, is so constructing the inclined wheel, or cutting cylinder, E, that it is made also to serve the purpose of horse-walk, by which means the power of the horse is applied directly to the cylinder itself, without the intervention of other mechanism, substantially as herein described.

CHARLES BISHOP.

No. 8837.—*Improvement in Trusses.*

What I claim as my invention, and desire to secure by letters patent, is the application to trusses and supporters of the guard-spring pad, as above described.

FREDERICK M. BUTLER.

No. 8838.—*Improvement in machinery for shaving the heads of Screw Blanks, Rivets, &c.*

What I claim as my invention, and desire to secure by letters patent, is the movable stop which determines the position of the screw blanks between the jaws, and then returns to let said blanks fall through, substantially as specified, in combination with the vertical hollow spindle, or mandrel, as specified. And, finally, I claim the feeding tube which conducts the screw blank, &c., to the hollow spindle, substantially as specified, in combination with the cam on the cutter head, or its equivalent, for moving the said tube out of the way of the cutter, as described.

JOHN CRUM.

No. 8839.—*Improvement in Razor Strops.*

What I claim as my invention, and desire to secure by letters patent, is the mode of attaching the strop to the case, so that it will not be soiled by the faces of it coming in contact with the case, and so that it will revolve, as herein described; using for that purpose the aforesaid case, strop-bearing spring, and pivots, in combination.

JOHN DEMERIT.

No. 8840.—*Improvement in Dredging Machines.*

What I desire to secure by letters patent, is—

First. I claim the shovels or scoops, *h*, forming the bottoms of compartments in a proper frame, and moving, at one end, on a hinge or similar contrivance; the other end being lowered to cause the scoop, as the frame is moved along, to collect the sand or mud, or other material operated on, and retain the same by suitable mechanical means operating to lift the scoop and close the bottom, as described and shown.

JAMES HAMILTON.

No. 8841.—*Improvement in Rice Hullers.*

I claim as my invention the combination of the concave fluted chambers with the smooth curved radial beaters for hulling rice, as set forth.

PETER McKINLAY.

No. 8842.—*Improvement in Shovel Ploughs.*

What I claim as my invention, and desire to secure by letters patent, is the construction of the haudles, and the principle or mode of shifting the same, as the same are herein fully described, with their operation. The invention of the common shovel plough is, of course, disclaimed.

WASHINGTON F. PAGETT.

No. 8843.—*Electric Whaling Apparatus.*

What we claim as our invention, and desire to secure by letters patent, is the application of electric galvanic current, conveyed by a conductor to an instrument, which is to be thrown into sperm and right whales, as well as other animals of the sea, in order to secure them.

DR. ALBERT SONNENBURG.
PHILIP RECHTEN.

No. 8844.—*Improvement in Gang Ploughs.*

But what we do claim as our improvement, and desire to secure by letters patent, is mounting the tongue or pole, A², upon the timbers, D, E, and uniting the same by an intermediate jointed connecting rod, W, to the horizontal coupling rod, L, which unites the front and rearward ends of the pivoted arms, J, J, of the axles K², whereby the direction or guiding of the gang of ploughs is regulated by the action of the team itself, in moving in any direction the attendant may require.

We also claim confining the tongue or pole, A², between the horizontal plate, S, and timber, D, by means of a fulcrum bolt, U, for the purpose of allowing the tongue or pole, A², to vibrate or move right or left with the direction of the team, whereby the required direction is given to the propelling and supporting wheels; and whereby the tongue or pole may be shifted or adjusted in its position to accommodate two or three horses, and yet maintain its central draught with the ploughs.

HARVEY KILLAM.
GEORGE VALLEAU.

No. 8845.—*Improvement in Bedstead Fastenings.*

What I claim as my invention, and desire to secure by letters patent, is the combined action or the combination of the link and wedge, as above described, for fastening bedsteads.

WILLIAM SHAW.

No. 8846.—*Improvement in Rat Traps.*

But what I claim as my invention, and desire to secure by letters patent, is the manner of constructing a machine for the killing of animals and throwing their bodies from the trap, and self-setting the same, substantially as described and shown.

JAMES SHEWARD.

No. 8847.—*Improvement in Apparatus for boring Artesian Wells.*

What I claim as new, and wish to secure by letters patent, is the spring or brace, as above described, or its equivalent, with the twisted flat bar, or other device, turning systematically the boring instrument, whilst using a rope, instead of rods, while sinking a bore hole in the earth in search of water or minerals.

JOHN THOMSON.

No. 8848.—*Improvement in Smoothing Irons.*

Having thus fully, clearly, and exactly described the nature, construction, and operation of our improved smoothing iron, what we claim therein as new, and desire to secure by letters patent, is the application (substantially as described) to a self heating smoothing iron of a tube or chamber (*j*) at the bottom of the fire box, provided with a registered mouth, or inlet, (*i*), some distance above the bottom and at its lower portion, with distributing apertures (*K*) communicating with the fire, whereby the draught is applied from beneath, and equally at every part, and placed under the control of the operator, without permitting the escape of ashes, or other refuse of combustion.

NICHOLAS TALIAFERRO.
WILLIAM D. CUMMINGS.

No. 8849.—*Improvement in Candle-Wicks.*

I claim a candle-wick, manufactured by the method herein specifically described.

CORNELIUS A. WORTENDYKE.

No. 8850.—*Improvement in Cultivators.*

What we claim as our invention, and desire to secure by letters patent, is the construction of the long metallic inclined blades, *e, e, e*, on the after-part of the machine, for cutting the sods and lumps, and pulverizing the ground, as set forth.

T. J. BALL.
JOHN POST.

No 8851.—*Improved Lock.*

What I claim as my invention, and desire to have secured to me by letters patent, is—

First. Holding the tumblers rigidly, so that they cannot be moved when the key hole is exposed, by means of a cam placed on the same shaft with the cam which moves the bolt.

Second. I claim so arranging the tumblers with the key that the tumblers will form themselves into the right position, so that the bolt can be withdrawn, by dropping, by their own weight, or being pressed by springs upon the key, as herein-above described.

ALBERT BETTELEY.

No. 8852.—*Improvements in Saw-Mills.*

What I claim as my invention, and desire to secure by letters patent, is the construction of a saw frame or gate, of metal tubes, *B, B*, constituting the guides, as well as the uprights, of said frame, and cross pieces or heads, *C, C*, united to said uprights, in the manner set forth.

I also claim the arrangement of the cross hook, *a*, bar, *E*, and hooks, *m, m*, on the ends of the saws, in combination with the sustaining side bars, *F, F*, and upper open plate, *D*, for the purpose and in the manner

substantially set forth in the foregoing specification and accompanying drawings.

WM. C. BRONSON.

No. 8853.—*Improvements in Spinning Bait for Catching Fish.*

What I claim as new, and desire to secure by letters patent, is—

First. Constructing a bait with an air-tight chamber, which chamber is provided with an aperture, or apertures, for the admission of air when fishing light near or on the surface of the water, and for the admission of water when it is desired to fish deep under the surface of the water, substantially as described.

Second. I do not claim passing the line loosely through a cork or float that the float may move freely upon the line; neither do I claim attaching a spinning bait to the line by means of a swivel. But what I do claim, and desire to secure by letters patent, is passing the line through a tube in the body of a spinning bait, in manner substantially as described, to enable the bait to twirl freely without twisting the line.

JULIO T. BUEL.

No. 8854.—*Improvements in Stone-cutting Machines.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Cutter-jaws, or their equivalents, combined with and carrying a cutter across the stone in the segment of a circle; the cutter being so set that the part of its periphery in contact with the stone when cutting inclines towards, and the part of the periphery opposite thereto from, the axis or centre of motion of the cutter-jaws, for the purpose set forth.

Second. The application of revolving cutters to dressing stone, moving and cutting in a curved line across the stone, and on a convex edge of the undressed portion of the surface formed by the line of cut and cutting towards the centre of motion of the cutters in such curved line.

Third. The combination of a rock-shaft with cutter-jaws to carry the cutters over and clear from the undressed portion of the stone, substantially as described, and for the purposes set forth.

Fourth. The combination of the rock shaft, guide-table, and friction rollers, and their equivalents, substantially as described, and for the purpose set forth.

Fifth. The combination of the rock-shaft and cam and roller, to produce the rocking or tumbling motion, substantially as described.

J. W. COCHRAN.

No. 8855.—*Apparatus for Closing Doors.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the heavy roller upon a vibrating arm with the turning railway or inclined plane—the former attached to the door and the latter to the casing—and the whole operating substantially in the manner and for the purpose herein described.

MINARD THURSTON COOPER.

No. 8856.—*Improvements in Horse Collars.*

What I desire to secure by letters patent is—

First. I claim the spring, 9, and staples, 10, to connect the upper ends of the hames, as described and shown.

Second. I claim so constructing and fitting the collar and hame that the hame shall work or slide on the collar by any jerk or lurching of the harness for the purpose of relieving the animal—said collar and hame being fitted with the rivets, 1 and 2, or their equivalents, to allow the one to slide on the other, and being connected by the bolts, 5, or their equivalents, as described and shown.

HENRY R. LATHAM.

No. 8857.—*Improved method of Attaching Roses for Knobs to Doors, etc.*

I claim as new, and desire to secure by letters patent, the combination, substantially as described, of the circle plate, A, having dovetails, *b, b*, on its inner face, the dovetails, *c, c*, which are fast on the door or other object, and the shank or socket, C, of the knob, or, what is equivalent, any spindle or shaft attached to the knob or handle.

NATHAN MATTHEWS.

No. 8858.—*Improvement in Coat Forms.*

What I claim as my invention, and desire to secure by letters patent, is the bow, C, in form substantially as described, suspended by a shank, *b*, at a point distant horizontally from its vertex, on a pivot, B, or its equivalent, which is stationary in a bracket, or any suitable standard or pendant, so placed or constructed as to allow the bow to turn round in any direction, as and for the purposes herein set forth.

WM. B. OLDS.

No. 8859.—*Improvement in Moth Traps to Bee Hives.*

I claim the peculiar construction of the moth trap, as herein described, composed of a slide, having the centre groove and two side grooves, and the metallic-hinged cover, arranged all as set forth in the specification.

EBENEZER W. PHELPS.

No. 8860.—*Improvement in Buttons, Studs, &c.*

What I claim as my invention, and desire to secure by letters patent, is making a stud-button or other similar fastening or article of jewelry in two parts—one part carrying a tube, *a*, and the other part, *b*, with two snap springs, *c, c*, operating in the manner substantially as set forth.

DAVID RAIT.

No. 8861.—*Improvements in Smut Machines.*

Having thus fully described the construction and operation of my combined smut and grain separator, what I claim therein as new, and desire to secure by letters patent, is the offset—that is to say, enlarging

the space of the hollow trunk on the opposite side thereof from that at which the grain is admitted—in combination with the screen, spout, *f*, and the passage and valve, *g*¹, for taking the dust, &c., into the fan-case, whereby the cheat and light grain, which will pass up the spout with the impurities, is effectually separated and delivered through the spout, *f*, substantially as herein fully set forth.

DANIEL SHAW.

No. 8862 — *Improved Harpoon.*

I do not claim making the flukes separate from the point, or causing the latter to enter deeper than the former into the body of the whale. But what I do claim as my invention, and desire to secure by letters patent, is the combination of the sliding and unlatching flukes with the lance, and the lines, or their equivalents, by means of which the point is driven deeper by the drag or traction on the line, substantially in the manner herein described.

J. D. R. STILLMAN.

No. 8863.—*Improved mechanism for actuating an Adjustable Eccentric.*

Having thus described the nature of my improvements in the valve-gearing of steam engines, I wish it to be understood that I make no claim to an adjustable sheave, nor to the use of a screw in this connexion. But what I claim herein as new, and desire to secure by letters patent, are the herein-described devices for the adjustment of an eccentric sheave—that is to say, the sheave stock, (*g*,) arranged so as to traverse a bed plate, (*e*,) at right angles to the shaft or axle, and operated by a hand bar, (*u*,) through the medium of suitable levers, (*t*,) and yoke, (*s*,) connected with a sliding collar, (*p*,) from which projects a rack, (*o*,) which gears into a pinion, (*n*,) upon the screw, (*k*,) which actuates the sheave; and this I claim, whether or not the same be combined with the vibrating arm, *d*, and shifting pin, *x*, as herein represented for variation of the throw.

MATHEW STUBBS.

No. 8864 — *Improvement in Grain Separators.*

Having thus fully described my improved thrashing machine, what I claim therein as new, and desire to secure by letters patent, is the novel arrangement for separating the grain from the straw, by which the slats, *h, h, h, h*, provided with teeth, have a rotary and lateral motion—said motion produced substantially as described, or in any equivalent manner, in combination with the inclined slats, *e, e, e, e*, whereby by their combined action the grain is perfectly and rapidly separated from the straw—operating in the manner and for the purpose herein fully set forth.

JOHN THOMPSON.

No. 8865.—*Improvement in Boot-Jacks.*

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is—

First. The heel-gripper and stirrup, in combination with the lever,

to draw the stirrup over and hold the toe of the boot, in the manner and for the purpose set forth.

Secondly. I claim the movable heel-gripper, in combination with the connecting rod and stirrup, constructed and operating substantially the same as described and represented.

SARDIS THOMSON.

No. 8866.—*Improvement in Seed Planters.*

Having thus fully described my improved machinery for seeding, what I claim therein, and desire to secure by letters patent, is the jointed tooth attached to the beam, as shown in fig. 7, in combination with the swivelling bifurcated spout to direct the corn, as above specified, for ribbed seeding.

I also claim the combination and arrangement of the counter (2) with the clutch, as described, so that the counting shall stop when the seed is not delivered.

I also claim the finger register. (f, i,) and its appurtenances, as above described, for regulating the quantity of seed delivered.

I also claim, in combination with the seeding apparatus, the pulverizer for guano, &c., constructed and arranged as set forth.

JESSE URMY.

No. 8867.—*Improvement in Rails and Car Wheels.*

What I claim, therefore, as my invention, and desire to secure by letters patent, is the guide wheels, in combination with the rail, constructed as described, and the carriage,—said wheels having their circumferences bevelled so as to expose two surfaces to roll upon, one to project against the side of the rail, and the other to come in action upon the surface of the inner strip, forming part of the chair when the guide-wheels become burthen wheels, as described; the whole being constructed and operating substantially in the manner as herein set forth.

JOHN VALENTINE.

No. 8868 — *Improvement in Drop Punches.*

I do not claim constructing the hammer with a long stem, and making the same serve as a guide; but I claim as my invention, and desire to secure by letters patent, the hammer, or drop, provided at the same time with a stem to serve as one of its guides, and one guide on each side at or near its lower end, substantially as herein described.

I also claim, as my invention, the manner of lifting and discharging the hammer, or drop, by means of the cogs in its stem, and the pinion operating therein,—the fall of the hammer, or drop, bringing the said pinion into gear with the motive power, and its upward motion releasing or discharging it therefrom at any given point, substantially as herein described.

SOLOMON ANDREWS.

No. 8869 — *Improvement in Hinges.*

I do not claim as new, simply constructing the window-blind hinge, with its screw-plates, so arranged as to be screwed to the back of the blind and the outside of the window casing. But I claim the bridge or inclined plane at the base of the pin, and the corresponding elongation of the eye operating upon and in connexion with the hook and catch attached, and connected in the manner described, the whole forming a fastening, and the mode of operating the same—the fastening taking hold of and pulling directly upon the window casing and the blind, and thus relieving the hinge as described.

I claim the use of the bridge or inclined plane at the base of the pin, and the elongation of the eye, as described, for disengaging the blind fastening, independent of its connexion with my fastening, as above described, and whether the fastening is connected with the hinge or not; the whole being constructed and arranged substantially in the manner above set forth.

WM. BAKER.

No. 8870.—*Improvement in Machines for Tonguing Boards.*

Having thus fully described our apparatus, what we claim therein as new, and which we desire to secure by letters patent, is the arrangement of two *sets* of stationary rebating cutters for tonguing boards in separate stocks, substantially as herein described, with a space between them for the escape of shavings—the sides of the stock being substantially parallel to the face of the board and each other, and the surfaces of their soles being substantially perpendicular thereto; the plane irons being inclined in the usual way to the soles and backs of the stocks, and the cutters in their length being substantially parallel to the sides thereof. We are aware that two sets of cutters, in separate stocks, have been differently arranged, and for an analogous purpose; and we therefore do not claim them except in the arrangement and position substantially as above described.

RANSOM CROSBY.
HENRY D. EDGCOMB.No. 8871.—*Improvements in the method of Welding Steel, etc., to Cast Iron.*

Having thus fully described our improved apparatus for the manufacture of articles of cast iron, with steel or wrought iron welded thereto, what we claim as our invention, and desire to secure by letters patent, is—

First. The metal box, or frame, for sustaining the steel in place and forming the cell below it; and

Secondly. Securing the steel in place by means of the clamps, in the manner above described.

M. FISHER.
JOHN H. NORRIS.

No. 8872.—*Improvements in Mills for Curvilinear Sawing.*

What I claim as my invention, and desire to secure by letters patent, is connecting the supporting roller (*a*) with the lever which forces it up against the under side of the log, by means of a joint and a segment slot, and securing bolt, or the equivalents thereof, substantially as specified; so that the said roller can be inclined in any desired direction from a horizontal line to suit the inclination of the under side of the log, and there secured, to give efficient support, as set forth.

I also claim extending the chucks for supporting the ends of curved logs below the head and tail blocks, so that the ends of such logs, in siding, may be supported below the surface of the head and tail blocks to bring the upper curved part within the range of motion of the saw, substantially as specified, when this is combined with the middle supporting rail on which the lower part of the chucks rests, and by which they are supported during the operation, as set forth.

And, finally, in the method of indicating the bevels, and keeping the log to them as it is being sawed, I claim the index hand, whose axis of motion is in a line, or nearly so, with the axis of rotation of the log, substantially as specified, in combination with either of the side levers, which have the same axis of motion as the index hand, and the adjustable or shifting inclined ways, substantially as specified, so that, as the carriage advances with the log, the passage of the side lever (whether on one side or the other) on the inclined plane, set to the required bevel, will shift the index hand and indicate the true bevel, to enable the operator to turn the log to correspond, as set forth.

JAMES HAMILTON.

No. 8873 — *Improvements in Machinery for Making Casks.*

What I claim as my invention, and desire to secure by letters patent, is as follows, viz: The sawing of two staves from one block, by means of two saws, which in succession enter the same kerf, then in succession diverge in opposite directions, and finally converge and pass out of the same kerf, substantially as specified, the two saws being mounted substantially as specified, so that they can be moved laterally in opposite directions, in combination with the templates, or their equivalents, for giving the required lateral motions to the saws, as the block of wood is moved forward towards the saws, substantially as specified. In the machinery for boring holes for dowel pins, I claim the arrangement of the mandrels carrying the bits on separate slides, to admit of varying their distance apart, substantially as specified, in combination with the reversible fence or gauge hung to a rock-shaft, mounted on a slide between the mandrels, and provided with the means of adjustment, substantially as specified, by means of which the bits can be set at pleasure, to bore the holes at any desired distance apart, and on the two edges to correspond, the distance being gauged from the same end, with the view to economize timber, as specified.

In the machinery for jointing staves, I claim, in combination with the circular saw and the hinged carriage—which is governed by guides, to determine the form to be given, as described—the employment of the gauging apparatus, to determine the quantity of stuff to be cut off, and

the gauge piece, with its two points, and made adjustable on the carriage, substantially as specified, by means of which combination the quantity of stuff to be cut away from each edge is regulated, to prevent waste, and an equal width of the two ends secured, when cutting the second edge, as set forth.

In the machine for setting up the staves and driving on the hoops, I claim the spring-arms jointed to the weight or head on the sliding shaft, or the equivalents thereof; the said arms being formed with lips inside, to support the hoop whilst setting up the staves, as specified, when the said arms are combined with the cam-plate, or the equivalent thereof, for the purpose of liberating the arms from the hoop, that they may be employed for driving on the hoop, substantially as specified.

And, finally, in the machinery for turning the heads, I claim, in combination with the face-chuck, for receiving the head, and the clamping piece, for clamping it against the chuck, substantially as specified, or the equivalents thereof, the employment of the jaws operated by screws, or their equivalents, for the purpose of forcing together the different pieces constituting the head, preparatory to clamping them on the chuck, and turning the head, substantially as and for the purpose specified.

JAMES HAMILTON.

No. 8874.—*Improvements in Looms for Weaving Figured Fabrics.*

What we claim as our invention, and desire to secure by letters patent, is—

First. The method of moving both picker sticks of a loom simultaneously and at each beat of the lay, by the mechanism herein described, or the equivalent thereof, whereby a shuttle may be thrown from either side of the web at each beat of the lay, and the momentum of the picker motion at one side of the loom is counterbalanced by that of the other picker motion at the opposite side of the loom, the mechanism operating in such manner that both the pickers are free to retreat to the outer ends of the shuttle-boxes the instant the shuttle is thrown, substantially as specified.

Second. The combination of the pattern-wheel, (U,) arm, (W,) double-armed lever, (R,) cross-head, (M,) and stop, (L,) operating substantially as herein set forth, to effect the shifting of the shuttle boxes, as herein set forth.

Third. The combination of the forked marches, reciprocating levers, pattern drum, and evening pin, substantially as herein set forth, to effect the working of the heddles to form the shed, as herein set forth.

Fourth. The combination of the supplementary arms on the cam-shaft, and pins upon the star-wheel, or the equivalent thereof, operating substantially as herein set forth, to vary the number of changes which the heddle mechanism is susceptible of.

Fifth. The combination of a fork and grid motion, for effecting the stopping of the loom when the weft thread breaks, as the shuttle is moving towards one side of the loom, with the shifting plate lever operating substantially as described, for preventing the loom from being stopped by the fork and grid motion, when the shuttle is thrown towards the side of the loom furthest therefrom.

Sixth. The combination of the long rock shaft on the lay, with its arms, toes, and levers, and of the chain lever and chain with the breast beam lever, or the equivalents thereof, operating substantially as described, to effect the stopping of the loom, when the shuttle is not in its proper shuttle box at the time the lay is beating up, and also whenever the shuttle has not been ejected from its box at the time the lay is completing its back stroke, as herein set forth.

BARTON H. JENKS.

ROBERT BURNS GOODYER.

No. 8875.—*Improvements in Reeling Machines.*

We do not claim to have invented a self acting stop-motion, to stop the machine when a given length of yarn has been wound upon the reel, this having already been applied to machines similar to ours; but what we do claim, is constructing and arranging the stop motion, substantially as described, so that, by adjusting it, the length of yarn wound upon the reel before it is stopped may be regulated at pleasure, and all the skeins wound under the same adjustment will have the same length.

ELIAS MACY.

SIMEON MACY.

No. 8876.—*Improvements in Sewing Machines.*

Having thus fully described my additional improvements, what I claim therein as new, and for which I desire to secure letters patent, is—

First The cut off friction pad, constructed and operating substantially in the manner and for the purpose set forth.

I also claim the construction and arrangement of the feeding apparatus as above described.

ISAAC M. SINGER.

No. 8877.—*Improvement in Seed Planters.*

What we claim as our invention, and desire to secure by letters patent, is—

First. The application of the dibbles, *l, l*, &c., constructed and arranged as described, to the peripheries of the wheel, and operating in the manner herein set forth.

We also claim the peculiar arrangement for feeding the seed to the hills, consisting substantially of the pistons, *f, f*, and tubes, *e, e*, regulated by the coiled springs, *s, s*, and bars, *g, g*, and operating as herein set forth.

B. T. STOWELL.

A. MARCELLUS.

No. 8878.—*Improvement in Instrument for Opening Boxes.*

What I claim as my invention, and desire to secure by letters patent, in the above described instrument for opening boxes, is the tapering score, *I*, cut in both jaws, but smaller in the upper one, or *F*, so constructed that when both jaws are driven in between the side and lid of

a box, the points of the jaws pass on each side of the nail, which will be gripped in the score, I, so that as the jaw, F, is raised to take up the lid, it will draw the nail out of the side, and thus prevent the head of the nail from being drawn through the lid as it rises, while the jaw, G, rests upon the side of the box, substantially as described.

Second. Is the tapering score, I, in combination with the peculiar construction and arrangement of the jaws, F and G, the latter being furnished with a recess at H, into which the former closes, in the manner and for the purposes herein set forth.

GEO. C. TAFT.

No. 8879.—*Improvement in Seed Planters.*

Having thus fully described my improved seeding apparatus and cultivator, what I claim therein as new, and desire to secure by letters patent, is the hollow reversing tooth, constructed in the manner and for the purpose set forth.

FRANCIS VANDOREN.

No. 8880.—*Improved Oblique Bucket Paddle Wheel.*

I do not claim placing the paddles in oblique positions to the axis of the wheel, as this has been done before; nor do I claim two sets of paddles, inclining obliquely in opposite directions, and all at the same distance from the centre of the wheel. But what I do claim as my invention, and desire to secure by letters patent, is the arrangement of two series of adversely inclining oblique paddles, one within the other, in the construction of steamboat wheels, substantially as herein set forth.

GEO. S. WEEKS.

No. 8881.—*Improvement in the feed apparatus of Planing Machines.*

What I claim as my invention, and desire to have secured to me by letters patent, is the arrangement by which the upper feed-roll is allowed to yield to any inequalities in the board, and, at the same time, draw down upon the surface to which it has yielded in proportion to the resistance to the cutting tools—that is, connecting the fixed shaft with the vertical sliding bearings of the upper feed-roll by means of the swinging, inclined, and vertical arms; the gears on the fixed shaft operating the lower feed-roll, and also playing into the gears which move the upper feed-roll—said latter gears having their bearings in the intersection or joint of the said arms; the arrangement being substantially as herein above set forth.

JOEL WHITNEY.

No. 8882.—*Improvement in Submarine Augers.*

Having thus described my invention, what I claim and desire to secure by letters patent, is forming a pod auger, with a hinge joint, E, in combination with connecting wires, substantially in the manner and for the purposes set forth and shown.

NORMAN BLAKE.

No. 8883.—*Improvement in Mattresses.*

What I claim, and desire to secure by letters patent, is the use of the hair of hides of cattle, treated after the manner of or steeped with the hides of cattle in the lime-vats of a tan-yard, or other suitable place, as described, with or without other animal or vegetable matter, treated or not treated conjointly therewith, or separately in the same way, and the use of other animal or vegetable matter, under like treatment and circumstances, as described, whether used conglomerately, conjointly, or separately, or their equivalents, when such animal or vegetable matter is of the kinds used for upholstering or sleeping purposes, in the articles of mattresses, ottomans, cushions, sleeping sofas, sacking bottoms, or analogous articles, whereby a new result is obtained, viz: an article obnoxious to bed-bugs, without the necessity of any temporary application of poisonous mixtures thereto; thus furnishing the world with a harmless antidote to a great nuisance, and abolishing the necessity for a great peril to human life in the domestic circle.

THOS. G. CLINTON.

No. 8884.—*Improvement in Winnowers.*

What I claim as my invention and improvements, and desire to secure by letters patent of the United States, is herewith set forth in detail:

Firstly. I claim, in combination with the side openings, discharge outlets, or passages, *o, o*, diagram, E, the invention, use, and application of the sliding diaphragm, with double sloping bottom, *p, p, p*, in diagram, E. This diaphragm bottom, as shown and used, has a double slope, or is a double inclined plane, outward, inclining from each side of its elevated longitudinal centre.

Secondly. I claim the use, application, and arrangement of an adjustable or sliding cheat or smut-board, *q, r*, as shown in diagrams, C and F; and the same, also, in combination with the top screen, No. 1, with side apertures or outlets, *o, o*, as shown in diagram, E, for the purpose as herein before fully specified.

THOS. J. DOYLE.

No. 8885.—*Sash Stopper and Fastener.*

I claim my improvement of combining the rocking plate, F, and lever in one single piece, and extending it below the part which rocks on the part, *b*, of the notch of the catch plate, all essentially in the manner as described, whereby I greatly simplify the construction of the window catch, and render it not only cheaper in construction, but less liable to get out of order.

CHAS. C. FELTON.

No. 8886.—*Improvement in protecting Wheels and Axles of Cars, by encasing them.*

What I claim as new, and desire to secure by letters patent, is encasing the axles and wheels of rail cars within a metallic casing, D, E, F, substantially as and for the purposes herein specified.

A. L. FINCH.

No. 8887.—*Improvement in the Keys of Piano Fortes, Organs, &c.*

I claim the improvement of the finger-keys of organs, piano-fortes, or any other musical instruments played in a similar manner, by constructing a part of every key in such manner that, when in position on the key-board, such part of every key shall be both level and in range with the similar parts of the other keys, so that the running of a finger over the keys of the whole chromatic scale, on the key board, may be capable of producing similar effects to those that can now be produced by a similar running of a finger over the lower range of keys of piano-fortes as now constructed, substantially in manner and form as set forth in the above specification.

W. F. FURGANG.

No. 8888.—*Improved Capping of Screws.*

I do not claim as my invention the adaptation simply of a cap of sheet metal to the particular configuration of any regular or irregular form by compression, or in whatever other manner the same may be produced. But what I do claim, and desire to obtain letters patent for, as my invention, is the attachment of a brass, copper, or other suitable metallic cap to, and its combination with, an iron wood screw, substantially in the manner and by the process described in the foregoing specification, (which I conceive to be the only practicable method in which the same can be usefully effected,) whereby, and by means of the successive operations of punching or stamping, the nick is first cut through the shell, and then, after being adjusted to the groove or slot in the head of the screw, the sides thereof are driven down into, and made to press closely against the sides of the slot, leaving the bottom of the groove or slot uncovered, so that the cap, when closed round the head of the screw, will preserve its hold without liability to be turned or displaced by the screw-driver which works upon the iron surface at the bottom of the slot, and against the covered sides thereof; thereby furnishing to the public, at a comparatively small cost, a wood screw, having all the beauty and finish of a brass, copper, or plated screw, in combination with the greatly superior strength of an iron one. The invention is equally applicable to steel screws, which may be capped in a similar way.

CHAS. T. GRILLEY.

No. 8889.—*Improvement in Machine for Drawing Spikes*

Having thus explained and described my invention, what I claim, and desire to secure by letters patent, is the shackle, with the arrangement for claspings the head of a spike, for the purpose of drawing it from the cross tie of a railroad track, in combination with the clevis, C, and the lever, A, substantially as hereinbefore described and set forth.

DANIEL HALE.

No. 8890.—*Improvement in Apparatus for Raising Water.*

What I claim as my invention, and desire to secure by letters patent, is constructing the wheel or turbine with exterior ribs, *e, e, e*, of any suit-

able number, size, or shape; the said ribs operating, in combination with a cover, D, or its equivalent, in the manner and for the purposes substantially as set forth.

N. H. LEBBY.

No. 8891.—*Improvement in Refrigerators.*

But what I claim therein as new, and desire to secure by letters patent, is the application, as herein described, to an ice safe or refrigerator of a crimped, convoluted, or corrugated form to the shelves, in order (in addition to combining strength with lightness of construction) to capacitate them for the collection, retention, and discharge of the water which results both from the ice and from the atmospheric moisture within the case.

ANDREW MAISH.

No. 8892.—*Improvement in Brick Machines.*

Having thus fully described my invention, and the manner of constructing the same, what I claim therein as new, and desire to secure by letters patent, is the manner of feeding the clay to the moulds by means of the cut-off (4) in the hopper case, with the scraper (5) for heaping the clay under the plunger, in connexion with the plunger, 8, operated as described, for partially condensing the clay into the moulds preparatory to pressing, substantially as described.

I also claim the "carrier" for clamping and removing the brick from the moulds, consisting of the clamp (36) and back plate, (32,) for clamping the brick, and the spring (38) and tumbler shaft and trigger, (37,) or their equivalents, arranged substantially as described, and operated upon by three stationary pins, 39, 40, and 48, substantially in the manner and for the purpose herein fully set forth.

JESSE SAMUELS.

No. 8893.—*Improvement in Rotary Pumps.*

Having thus described the nature and operation of our invention, what we claim as new, and desire to secure by letters patent, is the spiral flanch, D, working within a circular case, A, said flanch being constructed as described, in combination with the sliding valve, I; the spiral flanch and valve operating in the manner and for the purpose substantially as herein shown and specified.

HENRY C. SPALDING.
GAGE STICKNEY.

No. 8894.—*Improvement in Balance Gates.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the method of opening and closing the gate, A, substantially as herein shown and described, viz: by means of the ropes, or cords, *d*, *d'*, passing over the semi or half pulley, C, and attached to the small upright, *e*, said pul-

ley, C, being attached to one of the side pieces, a^1 , of the gate; the gate being hung upon pivots, b , b , and balanced by the weight or counterpoise, B; the several parts being operated as set forth.

WM. C. VAN HOESSEN.

No. 8895.—*Improvement in Tailors' Measures.*

What I claim as my invention, and desire to secure by letters patent, is the graduated straps, No. 1, No. 2, and No. 4, in connexion with the several centres about which they respectively turn, and with the graduated arcs, the said centres being arranged substantially as herein set forth and for the purposes specified, using for that purpose the aforesaid instrument, or any other substantially the same, and which will produce the intended effect; but I disclaim having invented the tape-measure or the elastic square, designated as No. 3., underneath the main instrument.

WILLIAM T. WELLS.

No. 8896.—*Improvement in Hame Tugs.*

What I claim as my improvement, and desire to secure by letters patent, is the formation of the hame tug by means of the two metallic plates fitted together so as to embrace the buckle, loop, and cleft, substantially in the manner herein set forth.

R. B. WHIPPLE.

No. 8897.—*Improved Reflecting Spirit Level and Square.*

I would remark, however, that I deem the cubical block, with its two mirrors and two spirit levels, arranged as seen in the drawings, the most convenient form; and it is this instrument, or combination of block or frame, two mirrors, and two spirit levels, or what is equivalent to the two levels, viz. a spherical surface level, that I claim as my invention.

FRANCIS WILBAR.

No. 8898.—*Improved devices for Casting Plates, Roses, &c., with dovetailed Grooves.*

What I claim as my invention, and desire to secure by letters patent, is forming the dovetails, a , a , in circular plates by dovetail pieces, j , j , which are withdrawn lengthwise from the recesses; the said withdrawing being performed by attaching the dovetail pieces to levers, F, F, within the cylinder, E, or body of the mould; the said levers being moved by a rod, G, passing through the side of the cylinder or body of the mould, substantially as herein set forth.

NATHAN MATTHEWS.

No. 8899.—*Improvement in Railroad Car Brakes.*

I do not claim the mere application of friction rollers, c , c , as such are not new; nor yet do I claim, independent of the means and manner shown, the employment of a stop to prevent the advance rubber from being raised by the wheel, or, exclusively of itself, the adoption of a

spring to reduce the shock. But what I do claim as my invention, and desire to secure by letters patent, is the combination and arrangement of the sliding bar, E, made as described and represented in fig. 1, with the rollers, *e*, *f*, and suspended frame, B, attached to a hanger, C, by a centre pin, *i*, on which is adjusted the spiral spring, *d*; said frame being made, arranged, and operated in the manner and for the purpose herein set forth.

BENJAMIN KRAFT.

No. 8900.—*Improved Valves for Steam Engines.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement, in the valve-chest of a steam engine, of a duplex valve, one part of which is actuated in the usual manner, by valve-gear, to admit steam from the boiler to act directly on the other part, and force it to open and close the steam or exhaust passages, substantially as herein described.

MATTHIAS W. BALDWIN.

No. 8901.—*Improvement in File-Cutting Machines.*

Having thus described my invention for cutting files, I would state that I do not claim a pattern for regulating the depth of the cut of the chisels; but I do claim the combination of the pattern located between the cam and the chisel-carriage, in the manner herein described, with said cam and carriage, and the file-carriage by which the pattern is moved; the whole arranged and operating substantially in the manner and for the purpose set forth.

JOHN CUST BLAIR.

No. 8902.—*Improvement in Shuttles for Weaving Hair-Cloth, &c.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the sliding-bar, *c*, with the spring, *a* and *b*, when used in connexion with stops attached to the shuttle-boxes, (or other convenient fixtures,) so that the motion of the shuttle will slide the bar in such a manner that when one of the springs drops one piece of the woof or filling, the other spring will receive and confine another at the other end, so that the pieces may be carried through, alternately, from each side, and released or dropped in the right position to be beat up; when the whole is constructed, arranged, and combined substantially as herein described.

DANIEL S. DEWEY.

No. 8903.—*Improvement in Hold-Back for Sleds.*

I do not claim connecting the dogs with, and operating them by, the backward pressure of the tongue; but I claim as my invention, and desire to secure by letters patent, as being more simple than the ordinary means by which this is effected, attaching the dogs, C, C, to the roller, B, rigidly, instead of to the runners, as is usual, and connecting the tongue to the said roller, by hinges or analogous joints, in such a manner that

the backward motion of the tongue, in relation to the body of the sled, turns the roller on its axis, and forces the points of the dogs so attached to it into the snow or ice of the road, substantially as and for the purpose herein set forth.

PERRY DICKSON.

No. 8904.—*Improvement in Smut Machines.*

Thus having fully described my machine, I wish it to be understood that I do not claim as new a "perforated case," the same having been heretofore in use; neither do I claim a spike rubber, nor a ventilator with spiral arms, nor scourers made of sheet or other metal; nor do I claim the oil-box at the top of the machine, nor the oil pipe for the lower bearing of the shaft. But what I do claim as new, and desire to secure by letters patent, is—

First. The projecting screen chambers, in combination with the arrangements for separating the rubbing-chamber from the fan-chamber, whereby the grain is prevented from being affected by the blast from the fan-chamber while it is passing through the rubbing-chamber, and is only brought in contact with the current of air where it ascends to take away the chaff and other impurities, substantially as herein set forth.

Second. I also claim, in combination with the scouring surfaces, the beating forks, for the purpose of beating the grain and breaking the hulls while falling from the rubber to the scourers, whereby the berries are more effectually cleaned from adhering impurities, as herein set forth.

JOHN M. EARLS.

No. 8905.—*Improvement in the Relief Steering Apparatus.*

Having thus described the nature of my invention, the way in which it is constructed, and its operation, I do not claim any particular part of the apparatus as new; but what I claim as my invention, and for which I desire letters patent, is the combination of the forked and unforked pawls with a single ratchet, and with rubbers, N and O, placed face to face, and on the same side of the wheel, A.

Second. I claim the combination of the spring, J, the arms, A¹, B¹, and the cap piece, C¹, with the relieving springs, H, I, whereby the pawls are supported with sufficient firmness, but, at the same time, permitted to have sufficient play to admit of the action of the said relieving springs, all as substantially set forth, represented, and described.

NATHANIEL T. EDSON.

No. 8906.—*Improvement in Railroad Switches.*

What I claim as my invention, and desire to secure by letters patent, is the bars or shifters, J, C, H, L, O, K, and N, P, M, constructed, arranged, and connected to the switches of a railroad in the manner and for the purpose substantially as described; so that if the train run in either direction, and the rudder be placed in either position, as described, and if the switch or switches are not in a proper position, the rudder will act upon the shifters and move them gradually as the train approaches, so as to

move and place the switches in such a position that the train may pass on unimpeded, without the risk of running off the track.

JOHN F. KLEIN.

No. 8907.—*Improvement in Gins for long staples of Cotton.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is regulating the feed of a cotton-gin for ginning Sea island cotton by means of an endless apron, which may be set to or from the feed rollers to suit the quality of the staple, and the quantity to be fed in to be cleaned, and still be driven by the same mechanical movement, substantially as herein described.

I also claim, in combination with the covered feed-rollers which receive the material from the apron and carry it into the machine, the series of alternate brushes and elastic beaters on the same shaft, for combing out the fibre and knocking off the seed whilst it is still held by said rollers, as herein substantially set forth and described.

I also claim, in combination with the inclined chamber, *j*, through which the material is driven by the blast from the wings of the beaters, the inclined chamber, *p*, having a cross blast through it from the fan-blower, *Z*, to complete the entire separation of the fibre and the seed, both chambers being provided with screens, substantially in the manner and for the purpose herein fully set forth and described.

CALVIN WILLEY, JR.

No. 8908.—*Improvement in Warm Air Furnaces.*

Having thus described the nature of my invention, and the manner in which it is constructed, what I claim as new, and desire to secure by letters patent, is the use of an equalizing flange, *H*, *H*, with the tubes, *h*, *h*¹, attached, by which the air on each side of the radiating cylinder is warmed to about the same temperature before entering the warm air conducting flues.

ALEXANDER KELSEY.

No. 8909.—*Improvements in Machines for Pressing Tobacco.*

Having thus fully described the nature, construction, and operation of my improved tobacco press, what I claim therein as new, and desire to secure by letters patent, is the use of the revolving mould disk, 3, combined with its revolving bed plate, 4, with the scraper, 5, and cloth roller, 6, or their equivalents, for keeping the moulds free from the licorice or juice of the tobacco, substantially as described.

I also claim the use of revolving sinkers, (9,) constructed substantially as described, combined with the pan, 10, and cushion, 11, or their equivalents, for keeping the same clean, and the combination therewith of mechanism for moving the sinkers a quarter of a revolution at every eight, more or less number of pressings, substantially as described.

I also claim the conductor formed of endless aprons or belts, or their equivalents, for confining and retaining the plugs under pressure until

they are thoroughly consolidated, in manner and for the purpose substantially set forth.

EPHRAIM PARKER.

No. 8910.—*Stud Brace for Flues of Sheet Water Space Boilers.*

What we claim as our invention, and desire to secure by letters patent, is the stud brace for bracing the flat surfaces of steam boilers, substantially as described in the foregoing.

ANDREW LAMB.
W. A. SUMMERS.

No. 8911.—*Improvement in Brushes.*

What I claim as my invention, and desire to secure by letters patent, is the double adjustability of the brush, by means of the combination of the ball and socket joint, and the sliding joint, or their equivalents, substantially as herein set forth.

FREEMAN MURROW.

No. 8912.—*Improved Float Gauge, Feed Regulator, &c., for Steam Boilers, &c.*

I do not, therefore, claim broadly the employment of a float to regulate the action of an independent mechanism, as a means of indicating the height of water and regulating the supply thereof, when such float acts upon such mechanism outside of the boiler. But what I do claim as my invention, and desire to secure by letters patent, is the employment, substantially as described, of an independent float within a steam or other boiler, or other vessel, which, as its position is varied by the change of level of the water, shall act as a check or stop to the motion of a mechanism combined therewith, and operated by an independent motive force outside of and passing through to the inside of the boiler, substantially as described, to determine the supply of water to be given, or to give the equired indication or alarm, as specified.

And I also claim the method herein described of preventing the action of the mechanism outside, which is actuated by an independent force, from reacting on and changing the position of the float, that it (the float) may be free to follow the varying level of the water, as specified.

THOS. J. SLOAN.

No. 8913.—*Improvement in Self loading and Dumping Carts.*

What I claim as my invention, and desire to secure by letters patent, is the manner of opening and closing the slatted bottom of the cart body, substantially as herein set forth, viz: by means of a bar, *f*, which is jointed to the near edge of the foremost slat, *e*, and which, when its rear end is unfastened, descends vertically, and allows the whole series of slats to be opened simultaneously by the action of the weight within the cart body pressing upon the same; and, when the rear end of the said bar is drawn rearwards and upwards, simultaneously actuates the whole series of slats, and thereby closes the bottom of the cart body.

B. T. STOWELL.

No. 8914.—*Improvement in Steering Apparatus.*

We are aware that the steering gear and rudder-head have been connected together, and the tiller made to rise and fall with them, and therefore we do not claim such an arrangement; but what we do claim as our invention, and desire to secure by letters patent, is the construction and arrangement of the tiller and rudder-head, as described, in combination with steering gear, entirely separate from the rudder-head; the tiller being connected with the latter, and attached to the former in such manner that, when the rudder is unshipped or raised unusually high by striking the bottom, the tiller will be disconnected therefrom, without danger of breaking either the steering gear or the rudder-head, or being itself broken.

NEHEMIAH HUNT.
ALFRED SWINGLE.

No. 8915.—*Improvement in Boxes for Journals.*

I claim making the cap box, in the manner described; that is to say, of alternate pieces of hard and soft metal, arranged in a helical position, by which, together with the circular end pieces, the soft metal is kept in place, and friction and injury to the axle prevented, substantially as described.

HENRY TURNER.

No. 8916.—*Improvement in Rock Drills.*

Having thus fully described the construction of my machine, what I claim therein as my invention, and desire to secure by letters patent, is, in combination with the cam wheel, C, and guide, U, the hanging of the lever by which the drill is raised on a jointed arm, so as to give it two sets of motions, viz: up and down, to lower and raise the drill, and a backward and forward motion from and towards the cam-wheel, to operate the machine without noise or jar; the whole being arranged substantially in the manner and for the purpose specially set forth and described.

W. F. ASH.

No. 8917.—*Improvement in Leather Gauges.*

What I claim as my invention, and desire to secure by letters patent, is the wheel, E, with its inclined planes or wedges, arranged so as to act upon the roller frame, substantially in the manner herein set forth.

LEWIS W. BEECHER.

No. 8918.—*Improvement in Potato Washers.*

What I claim as my invention, and desire to secure by letters patent, is the screen and cylinder combined, the screen working within the cylinder, and its axis or shaft working within or through the tubular projections or bearings of the same, substantially in the manner and for the purposes set forth.

ALONZO BENTLEY.

No. 8919.—*Improvement in Lever Jacks.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the lever, H, the lip, *d*, and the cleat, *g*, constructed as herein set forth, with the dog, D, and the springs, *e*, so as to act together, in the manner and for the purposes herein stated.

LEVIS H. DAVIS.

No. 8920.—*Improvement in Electro-Magnetic Alarm Bells.*

I claim as my invention the combination, substantially as herein set forth, of the electro-magnet and armature (or its electro-magnetic equivalent) with the falling ball, or spring, and the detents, and the lifting cam, or its equivalents, so arranged that when the ball is supported by the armature, a slight force only of the electro-magnet is required to trip the ball, which ball in falling acquires sufficient momentum to produce much greater mechanical effects than the magnet alone, the velocity of the ball in falling being still further accelerated by the force of a spring, if desired. The power thus obtained I use in the manner and for the purpose herein described.

MOSES G. FARMER.

No. 8921.—*Improvement in Washing Machines.*

Having thus described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the application, substantially as described, to the process of washing of balls of wood, or other buoyant material, in connexion with a reciprocating frame, or equivalent device, by means of which a rolling, yielding, or evenly pressing surface is presented to the clothes or other articles to be washed.

CHRISTOPHER HOLLINGSWORTH.

No. 8922.—*Improved Adjustable Wrench.*

What I claim as my invention, and desire to secure by letters patent, is constructing the collar or eye of the inner jaw with an aperture therein of greater section than the bar on which it slides, in combination with the spring thereon and the screw thereto attached; the whole constructed and operating substantially in the manner and for the purpose herein described.

ANDREW HOTCHKISS.

No. 8923.—*Improvement in Differential Safety Valves.*

Having thus fully described my improved safety valve, I would state that I do not claim constructing a valve that shall act upon the differential principle, or one which will not admit of the application of external weight or pressure; but what I do claim as new, and desire to secure by letters patent, is the peculiar arrangement and combination of the hollow cylinder box, D, sliding in case, A, with the conical valve and tubular valve-rod and escape pipe, B, constructed and operating substantially in the manner and for the purpose herein fully set forth.

JOHN McCLINTIC.

No. 8924.—*Improvement in Railroad Car Brakes.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the radial bar, H, turning loosely on the brake lever shaft, F, of the tender or forward car, 1, and spring, I, for enabling the brakeman to operate the brake of the tender or forward car, on which he is stationed, without altering the position of the radial bar, H, after being set, as described.

THOMAS G. McLAUGHLIN.

No. 8925.—*Improved Anvil.*

What we claim as our invention, and desire to secure by letters patent, is a cavity in the body of anvils, for the purpose of cooling the same, by the introduction of water or other fluid into the said cavity, while the faces of said anvils are undergoing the process of tempering.

CHARLES PETERS,
WM. FETTER.

No. 8926.—*Improved machinery for Grinding Conical edged Knives.*

Having thus fully described the nature, construction, and operation of my invention, I will now state what I claim as new therein, and desire to secure by letters patent.

I claim—First. The combination of the curved way, H, and table, I, thereon, provided with appropriate automatic contrivances for traversing the latter along the former, with the carriage, F, on which they are both supported, and which is provided with axis and screws, or their equivalents, to adjust said carriage, F, to any required angle with the horizon, for the purpose herein fully described.

I claim—Second. Operating the feed motion, or the motion for carrying the edge of the knife across the periphery of the stone, by means of a roller, Y, bearing on the periphery of the stone, in the manner and for the purpose herein fully set forth.

I claim—Third. Connecting the carriage, F, and the table, I, which carry the knife, with the roller, Y, receiving motion from the stone by means of the combination of mechanism, substantially as herein described, by which the motion of the roller towards the axis of the stone, consequent upon the wear of the stone, will cause the knife or knives being ground to follow the periphery of the stone, and thereby compensate for its wear and preserve the required form of the edge or edges of the knives, viz: that of an arc of a circle, as herein fully set forth.

JAMES L. PLIMPTON.

No. 8927.—*Improvement in Churning Machines.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the arrangement of dogs, or pawls, J, J¹, and pen, h, with wedges, K, L, for the purpose of tripping each other.

GELSTON SANFORD.

No. 8928.—*Improvement in Funnels.*

What I claim as my invention, and desire to secure by letters patent, is the measuring funnel, constructed substantially as herein set forth, with an interior ventilating tube to admit air beneath the valve.

CHRISTIAN SCHNEIDER.

No. 8929.—*Improvement in Machinery for Grinding or Polishing Saw Blades, &c.*

Claim first. The combination of two grindstones, or their equivalents, revolving in the direction herein made known, for the purpose of grinding or polishing two sides of a saw, or other article, simultaneously, with a reciprocating frame, or its equivalent, for the purpose of holding the article being ground or polished, whereby the tendency of either stone to move the article is counteracted by the action of the other stone, and the same force is thereby required to reciprocate the article in either direction, as described.

Second. The combination of the right and left hand screws, carriers and nuts for said screws, movable pedestals, or boxes, together with the cross shaft, worms, worm-wheels, and handles, substantially as set forth, for the purpose of moving two grindstones, or their equivalents, simultaneously, against opposite sides of an article being ground or polished, as described.

Third. I do not claim giving an automatic traverse motion to grindstones. But what I do claim, is the arrangement of screws, mitres, wheels, handles, eccentrics, eccentric boxes, and movable frame, substantially as herein described, whereby I am enabled, at any time, to move the grindstones, or their equivalents, entirely across the machine, for the purposes set forth, without interfering with the automatic traversing motion which is given to the said stones, irrespective of their precise position with reference to either saw frame, or either saw, or other article fixed in said frame.

Fourth. The arrangement in the same machine of two sets of reciprocating frames, either of which can be stopped without affecting the other, and a carriage, whereby the grindstones can be caused to move from one frame to the other, by which arrangement one saw can be ground or polished while another is being adjusted into place.

WILLIAM SOUTHWELL.

No. 8930.—*Improvement in Lightning Rods.*

Having thus fully described the nature of my improvement, what I claim therein as new, and desire to secure by letters patent, is the formation of the point of a lightning rod of three or more metals, encased one within another—the most fusible to the outside, in order to prevent the destruction of the entire point by melting from an overcharge of the electric fluid.

JAMES SPRATT.

No. 8931.—*Improvement in Window Blind Machinery.*

Having thus described the nature, construction, and operation of my invention, I will proceed to state what I claim, and desire to secure by letters patent.

I claim—first. Hanging the auger shafts in swinging arms, or gates, S, S, of different lengths, hung on centres, *m, m*, said centres being in line, so that by moving the said swinging arms or gates nearer to or further from a position at right angles to the line in which the centres are placed, the distance between the said auger shafts taken in lines parallel to the line of centres, *m, m*, will be increased or decreased, and thereby be adjusted to different widths of slats lying upon each other, as herein substantially set forth.

I claim—second. The combination of the sliding bar, or carriage, O, carrying the stiles and rods, with the reciprocating carriage, R, carrying the mortising augers and wire-hole prickers, in the manner substantially as described, for the purpose of boring the mortises in the slats and pricking the wire holes in the rods, and insuring the distances between the mortises and points of attachment of the slats being precisely the same throughout.

I claim—third. The reciprocating slat table, or bed, made in three parts, X, Y, Y^s, the two end parts of which are adjustable to the middle part, in combination substantially in the manner described with the adjustable cutter heads, Z, Z, to wit: the end parts, Y, Y^s, of the table, or bed, and the cutter heads, being adjustable relatively to each other, for the purpose of tenoning or turning down the pivots on both ends of slats of various lengths.

I claim—fourth. Pricking the wire-holes in the slats and feeding them at proper intervals, from the box in which they are contained, to the bed or table upon which they are tenoned, by means of a vibrating feeder, 23, deriving its motion from the bed or table carrying the slats—the said feeder being provided with suitable horns, 24, 24, or their equivalents, and prickers, 29, 29, for the purpose of entering the box and pricking and pushing out the slats, one after the other, in succession.

DANIEL H. THOMPSON.

No. 8932.—*Improvement in Speaking Tubes.*

What we claim as our invention, and desire to secure by letters patent, is the combination of an alarm valve with a speaking tube or pipe, in the manner and for the purpose substantially as herein set forth.

THOS. J. WOOLCOCKS.

WILLIAM OSTRANDER.

No. 8933.—*Blind and Shutter Fastener.*

What I claim as new, and desire to secure by letters patent, is the method of securing or fastening window shutters by having the upper portion of the pintle, B, of the hinge of a square or other many sided form, and the upper portion of the socket, C, of a corresponding shape; a space being between the socket and pintle to receive the cap, E, which corresponds in shape to the upper portion of the pintle and socket, and

fits on the pintle and in the socket, securing or fastening the shutter as herein specified.

SAMUEL BARKER.

No. 8934.—*Improvement in Portable Cot Bedsteads.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The elevation in the side-rails as a substitute for the pillow, as described.

Second. I also claim the dovetails as used for attaching and detaching the legs to and from the side-rails—that is to say, the dovetails entering their mortises from opposite ends of the cot frame, so that they cannot readily loosen by use.

Third. I also claim the arrangement of the right and left hand screws which unite the opposite legs at their crossings, in such manner that the screws shall tend to tighten the joint as the legs separate from each other, or loosen the same as they approximate.

Fourth. I claim the combination of the tense bars, F—having right and left screws—with the side-rails, Q, Q, of a cot bed, for the purpose of keeping the sacking bottom tense.

WILLIAM C. BETTS.

No. 8935.—*Improvement in Railroad Car Seats.*

What I claim as my invention, and desire to secure by letters patent, is constructing the backs of railroad car seats with outer sliding backs, A, A, fitting in slides, a, a, a, and held by springs, for the purpose of elevation above the ordinary back, or depression below it, as herein shown and set forth.

ABEL B. BUELL.

No. 8936.—*Improvement in Meat Cutters.*

What I claim as new, and desire to secure by letters patent, is arranging in separate concaves—maintaining vertical positions, and uniting with each other—two cylinders, the one above the other,—the upper one operating to partially mince the meat and deliver it upon the lower cylinder, revolving at a greater speed, for reducing it to the required fineness, as described.

WILLIAM BURNS.

No. 8937.—*Improvement in Measuring Faucets.*

Having thus fully described our invention, what we claim therein as new, and desire to secure by letters patent, is the so constructing of a faucet, for measuring and drawing molasses, honey, oil, tar, or other liquids, that it shall always stand charged with a measured quantity of the liquid, which may be forced out of the faucet instantaneously, however thick or sluggish it may be, when the same is accomplished by means substantially the same as herein described and represented.

JACOB R. BYLER,
G. W. SENSENICH.

No. 8938.—*Improvement in the Manufacture of Brushes.*

I claim as my invention the above-described improvement in filling the holes of a brush block with bristles; the same consisting in the employment of a frame to contain said bristles in mass, and hold them in the brush blocks, and in the direction of their respective holes in the block, in combination with giving to such block and frame such movements, rappings, jarrings, or blows as to cause the bristles, by the force of gravity, or concussion, to pass into and fill the holes in the block, as hereinbefore stated.

ABBOT R. DAVIS.

No. 8939.—*Improvement in Cooking Boilers.*

What I claim as my invention, and desire to secure by letters patent, is the application of the small cup to the cooking pot, as herein described.

L. S. DE BIBORY.

No. 8940.—*Improvement in Apparatus for Soldering in a vacuum.*

Having thus described the nature of our invention, what we claim therein as new, and desire to secure by letters patent, is the application to the purposes of soldering in a vacuum of a hollow bent tube, (*f, g, h,*) for the reception of a heater; the said tube being closed at the lower end, and provided with a screw thread (*f*) at its upper end, fitting tightly within a screw neck or collar, (*e,*) upon the glass receiver of an ordinary air pump, or other suitable instrument for producing a vacuum; the bent form of the tube bringing it to bear, during its rotation, upon the perimeter of the cylinder disk which closes the aperture.

J. B. HORNE.

J. R. HORNE.

No. 8941.—*Improvement in Blocks for Printing Oil-Cloths.*

Having thus described the nature and operation of my invention, I do not claim the construction of the stock, *H*, or gauges thereon. But what I do claim as new, and desire to secure by letters patent, is the movable gauge, *E*, in combination with the adjustable point, *F*, or its equivalent, to compensate for the contraction and expansion of the pattern block, in the manner and for the purpose substantially as shown and described.

JAMES JENKINS.

No. 8942.—*Improvement in Platform Scales.*

What I claim as new, and desire to secure by letters patent in the above-described scale or balance, is the rod, *V*, and the rod and socket, *W*, and section, *Z*, or their equivalents, in combination with the revolving head and face, (or graduated plate,) and hand or index, to show at once, and in any required direction, the weight of the article weighed.

ROBERT NEWELL.

No. 8943.—*Improvement in Lead-Pipe Machinery.*

What I claim as my invention, and desire to secure by letters patent, is connecting the core with the ram by means of a universal joint, or its equivalent, substantially as specified, so that the core shall be retracted with the ram, in combination with the cylinder and die of a machine for making pipe, by pressure, from lead or other soft metal run into the cylinder and on to the said core in the molten state, substantially as specified, whereby the core is retracted with the ram, and held in position while the charge is poured in, and, during the operation of forming the pipe, the vibrations of the ram do not practically affect the central position of the core in the dies, as herein specified.

BENJAMIN TATHAM.

No. 8944.—*Improvement in Tables.*

Having thus fully described my invention, I will now proceed to state what I claim as new, and desire to secure by letters patent. I claim—

First. The employment of "flies," G, G, levers, H, H, or their equivalents, in combination with the spiral springs, E, or their equivalents; the whole being constructed and arranged, and operating, in the manner and for the purposes substantially as herein set forth.

Second. The employment, in the manner substantially as herein described, of the levers, H, H, or their equivalents, in combination with the flies, G, G, for the purpose of lowering the table leaves when desired.

TIMOTHY H. TAYLOR.

No. 8945.—*Improvement in Gold-beating Machinery.*

What I claim as my invention and improvement, and desire to secure by letters patent, is the double action, adjustable, differential cams, or their equivalent, combined with the sliding rod and pivoted cylinder, in connexion with other parts of gold-beating machinery, substantially in the manner and for the purpose as herein set forth and described.

WM. VINE.

No. 8946.—*Improvement in Mash Tuns.*

What we claim as our invention, and desire to secure by letters patent, is the completely enveloping the mash tun with water, or sufficiently so to produce the desired rapidity in cooling the mash.

ROBERT WICKS.

JAMES FAULKNER, JR.

No. 8947.—*Improved Implement for Cutting Butter from Firkins.*

What I claim as new, and desire to secure by letters patent, is the knife, C, operated by means of the levers, D, D, or their equivalents, in combination with the piston, B, and the box; the knife, levers, and piston being constructed, arranged, and operated in the manner and for the purpose substantially as herein shown and described.

NATHANIEL WOODBURY.

No. 8948.—*Improvement in Carding, by which variegated Slivers are produced.*

What we claim as our invention and improvement, and desire to secure by letters patent, is traversing the doffer or doffers of a card, or setting the teeth upon them serpentine or zig-zag, or serpentine and zig-zag, or in such other curves, points, or angles as may suit the taste or fancy of the operator; also, to traverse them, when so set, if desirable, so as to take the wool or other materials from such parts of the main or other cylinder of the card, and deliver it to the condensing rollers, or other apparatus, so as to make roving variegated, either in colors or materials, or both, when said colors or materials are fed upon the card, substantially as described.

JONAS HOLMES.
EPHRAIM FRENCH.

No. 8949.—*Improvement in Stoves.*

It is, therefore, that my invention, and what I claim, consists in a combination of the following particulars or elements, viz:

First. A close drum or chamber made with one or more air-inlets, and their closing slides or doors in its lower part, and a fuel opening and door at or near its upper part.

Second. A fire-pot, or chamber of combustion, placed within the said drum, and having a grate in its lower part, and a smoke discharge pipe leading out of it at or near its upper part.

Third. An air space under the fire-pot grate.

Fourth. A space between the external sides of the fire pot and the internal sides of the drum, and made to freely communicate with the space under the grate.

Fifth. A space above the fire-pot or place for the fuel, and made to freely communicate with the space around the fire-pot.

Sixth. A fuel supply opening and door, and an air register in the top of the fire-pot; the whole being arranged and made to operate together substantially as above described.

G. W. KENNISON.

No. 8950.—*Improved Ships' Blocks.*

What I claim as new, and desire to secure by letters patent, is the employment or use of the metal bands or hoops, B; said hoops or bands encompassing the cheeks, A, and fitting in grooves (a) in the peripheries of the cheeks; the hoops or bands having eyes, C, C, formed in them at the upper end of the block, through which the bolt, D, passes, securing the cheeks the proper distance apart at the upper end of the block, as set forth.

. CHAS. H. PLATT.

No. 8951.—*Improvement in Umbrellas.*

What I claim as my improvement, and desire to secure by letters patent, is—

Distending or opening the umbrella by the rods, F, which have heretofore simply served as stays to the covering, and been permanently

attached thereto, the covering being secured to the apex of the central rod, D, and the lower ends of the distending rods, F; and this I claim, whether the inner ends of the distending rods be made to descend, or the central rod to ascend with the apex of the covering in distending the umbrella.

I also claim the manner of securing the cover, I, to the frame, viz: by means of swivels, G, G, attached to the cover, and screwed on to the ends of the rods, F, as herein described.

I also claim the application of the springs, *h, h*, of the rods, F, to the slide, E, operating in the manner and for the purpose described.

J. V. TIBBETS.

No. 8952.—*Improvement in Iron Safes.*

What we claim as our discovery, invention, and improvement, and desire to secure by letters patent, is the application of chalk, or whiting, which has been subjected to the action of acids, and has been partially deprived of its carbonic acid,—the material which we use being in fact the waste or residual matter left from the manufacture of what is called mineral water, after chalk or whiting has been subjected to the action of acids, for the purpose of expelling a portion of its carbonic acid, this residual matter consisting substantially of the substances named in the analysis before referred to,—in the construction of double iron chests or safes, in the manner above described, or in any other manner substantially the same.

WILLIAM ALFORD.
JOHN D. SPEAR.

No. 8953.—*Improvement in Saw-Sets.*

What I claim as my invention, and desire to secure by letters patent, is the dog, or set, J, so constructed and arranged as to traverse or slide upon a rod or bar, in a direction parallel to the toothed edge of the saw, for the purpose of setting the same, substantially as described.

A. G. BACHELDER.

No. 8954.—*Improvement in Straining Saws in Saw-Mills.*

I will now state what I claim as new, and desire to secure by letters patent.

I claim the employment of the lever, H, *b, l*, or its equivalent, the spring, M, connected to the lever, H, by a rod or link, L, which is secured or attached to the lever near its fulcrum, *a*; both operating together, and in combination with a reciprocating saw, connected to the lever, H; and the whole being constructed and arranged, and operating, substantially as herein described.

E. BOOTH.

No. 8955.—*Improvement in Steam Boilers.*

What I claim as my invention, and desire to secure by letters patent, is isolating the lower portion of the water space surrounding the furnace from the upper portion, and connecting it by a free and constantly open communication with the tank of feed water, in such manner that the

feed water of the tank will circulate without being forced by a pump in contact with the fire-plates, to cool them, and to be itself heated preparatory to being pumped into the boiler, substantially as herein set forth.

JAS. W. FARRELL.

No. 8956.—*Improvements in Cartridges for Breech-loading Guns.*

We do not claim to have invented any of the separate parts described herein; but we do claim as new, and of our own invention, the application of the leather breech piece, *a*, to cartridges used with breech loading guns; such leather breech-piece serving the purposes of a foundation for its own cartridge, a protection to the breech-pin, a wad for the next cartridge in succession, and of a swab, to clean out the soilage caused in the barrel by the antecedent explosion, producing a safe cartridge for pieces that load at the back of the breech, and in which explosion is also caused in the line of the axis of the barrel, substantially as described and shown, but without regard to the sizes of arms used with these cartridges, and irrespective of the machinery, or mechanical means, by which the cartridge itself is made.

WM. W. MARSTON.

FREDERICK GOODELL.

No. 8957.—*Improvement in Swings.*

Having thus fully described my invention, what I claim as my invention, and desire to secure by letters patent, is the combination of the wire frames, constructed as set forth, with the net work and swing cords.

EDWARD MAYNARD.

No. 8958.—*Improvement in Cotton Batting.*

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is uniting two or more layers of cotton batting together by means of any glazing material, thereby producing a new article of manufacture, which I term cotton felt, to be used for upholstery and all other purposes to which it is applicable, as herein set forth.

E. P. RIDER.

No. 8959.—*Improvement in Churns.*

What I claim as my improvement, and desire to secure by letters patent, is hanging the series of beaters or dashers, 4, 4, 4, 4, by rods, 2, 2, extending from the shaft, 1, 1, the lower ends of which rods support the fulcrum, *f*, on which the beaters or dashers move, (not confining myself to the number or form of the dashers,) the said dashers being operated by the rods, 3, 3, 3, 3, and bell cranks, 5, 5, substantially as herein set forth.

CLARKSON RHODES.

No. 8960.—*Improvement in Ovens.*

Having thus fully described my improved oven, with cooking apparatus attached, what I claim therein as my invention, and desire to secure by

letters patent, is the construction of said oven, with recesses on the side or sides for fuel, substantially as set forth above; and in combination therewith the cooking chambers as herein described.

THOMAS N. REID.

No. 8961.—*Improvement in Hay Rakes.*

What I claim as my invention, and desire to secure by letters patent, is in so constructing revolving spring tooth-rakes as to bring the centre of revolution nearer the lower ends of the teeth than can be done by having them revolve on the head around which the teeth are coiled (which is the usual mode.) By which means I cause them to revolve much quicker, and in going a much shorter distance than otherwise can be done; while at the same time they revolve much easier and more readily, in consequence of having the second head, coil, &c., to balance, or nearly so, the remaining hest of the teeth, &c., which will be on the other side of the centre of revolution, or nearly so; thereby giving the required length and elasticity to the teeth with a quick and easy revolution, which I accomplish as herein set forth, or by means analogous thereto.

CHARLES R. SOULE.

No. 8962.—*Improvement in Cements.*

Having thus described my invention, I claim the primary cement herein described, formed of the hydrate of lime in a finely subdivided state, and resin in a finely subdivided state, mixed together with water in a cold state, for the purpose set forth.

B. S. WEICH.

No. 8963.—*Improvement in Machines for making Fuses.*

What I claim as my invention, and desire to secure by letters patent, is passing the hollow mandrel through the winding spools in combination with the fliers, E, which direct the winding thread from the different spools to the interior of said mandrel, for the purpose of winding the fuse as it passes from the forming machine, when combined substantially as herein described.

ALBERT F. ANDREWS.

No. 8964 — *Improvements in the Tumblers of Locks.*

What I claim as my own invention, and desire to secure by letters patent of the United States, is—

Firstly. The employment of tumblers in such combination with the bolt of the lock, that each and every tumbler independent of the others shall have freedom to move laterally as well as vertically, whereby a great number of positions may be assumed by their unattached ends, as described.

Secondly I claim the guide pieces upon the key, for the purpose of controlling the lateral motion of the tumblers as described; the whole being constructed and operating substantially in the manner and for the purpose herein set forth and described.

HENRY BLAKELY.

No. 8965.—*Improvement in Watch Chain Swivels.*

What I claim as my invention, and desire to secure by letters patent, is making the joint of the opening piece, *i*, oblique to the eye, so that it will open obliquely to the hook piece, *a* or *b*, in the manner and for the purpose herein set forth.

WM. B. CARPENTER.

No. 8966.—*Improvement in Mortising Machines.*

Having thus fully described my several improvements, and sufficiently so for the better illustration of the former, the parts (not new) connected therewith, and constituting in combination the machine, I desire it to be understood that the main principle of action, involving reciprocating chisels, and by a ratchet wheel feeding on the timber, is not by any means new; nor do I claim such, these being well known and common to other mortising machines; nor yet do I claim reversing the chisels; neither do I claim, separately of themselves, the devices by which I effect my improvements. But what I do claim as my invention, and desire to secure by letters patent, is—

First. The employment of a stop catch or hook, *O*, operated on by the reach arm or pawl, *n*, to prevent the momentum given to the ratchet wheel, *T*, from throwing the pawl, *n*, out from between the teeth after having performed its pull, and so making irregular the feed, one (*r*) of the ratchet wheel teeth being bevelled or reduced in order to admit of the pawl, *n*, entering sufficiently deep to arrest the motion of the feed, in the manner and for the purpose set forth.

Second. The combination and arrangement of the stud, *a*, clutch-arm, *G*, lever, *H*, cam, *J*, and stop, *b*, so that when the lever, *H*, is thrown in, the cam, *J*, will unclutch the machine, when the chisel crank, *C*, is on the full centre, and the chisels are out of the work, and retain them in that position by the clutch, *G*, coming in contact with the stop, *b*; the several parts being made, arranged, and operated in the manner herein fully set forth.

JOHN B. CHAMBERS.

No. 8967.—*Improvement in Stone-dressing Machines.*

What we claim as our invention, and desire to secure by letters patent, is hanging the arm, *J*, carrying the pick upon a shaft, *F*, which receives a vibratory motion through a cam, *G*, driven by a mill spindle or other spindle provided for the purpose, and giving the said arm a motion lengthwise along the said shaft, substantially as and for the purpose herein described.

SIMON W. DRAPER.
REUBEN M. DRAPER.

No. 8968.—*Improvement in Swivel hooks.*

We do not claim to have invented any one of the parts described and shown, as these, in themselves separately, are not new. But we do claim

the combination of the spring, 7, and its enclosing slide, 8, with a swivel hook, for the purposes and as described and shown.

A. FAULKENAU.
MORRIS FAULKENAU.
MORRIS POLLAK.

No. 8969.—*Improvement in Worm Tubs of Stills.*

What I claim as my invention, and desire to secure by letters patent, is the division of the worm-tub into an upper and lower compartment, F and G, and connecting them to each other by a valve, *u*, so arranged that it will be operated by the influence of the temperature of the water in the upper compartment, F, for the purpose of enabling the distiller to keep the water in the said upper compartment, at any elevated temperature that may be required for use in preparing the distiller's beer, or fermented wash, or for other purposes in the distillery.

GEORGE JOHNSTON.

No. 8970.—*Improvement in Flour Bolts.*

I do not claim to be the first to use a flat sieve or bolter to separate substances of different sizes; but what I do claim as new, and of my own invention, and desire to secure by letters patent of the United States, is the construction, arrangement, and combination of the shafts and cranks, 3 and 6, to receive and move the bolter, *c*, with the cranks, 7 and 8, and connecting bar, *a*, or their equivalents, as described, to regulate and equalize the movement, the coarser particles being carried off from the bolter, *c*, by the flexible tube, *f*, or other convenient means; the whole being substantially as described and shown.

And I claim the application of the breakers or spreaders, *d*, in the bolting box, *c*, to prevent the material working off too fast, and spread it evenly over the sieve or bolter, *e*, as described and shown.

DAVID MARSH.

No. 8971.—*Improvement in Lubricating Oils.*

Having described the character of my invention, I will state that I am aware that spirits of turpentine and carbonate of potash have been used before my invention in lubricating compounds; and I do not, therefore, claim them, except as specific agents, to accomplish a definite and specific purpose stated in the specification.

What I claim as my invention, and desire to secure by letters patent, is the combination of a mixture of camphene and benzole, carbonate of potash and glycerine, with whale or other cheap oil having similar properties, in the manner and for the purposes set forth.

WM. H. MASON.

No. 8972.—*Improvement in Hominy Machines.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the beaters, *c*, *c*, with the beaters, D, D, each set

moving in opposite directions, as set forth in the foregoing specification, substantially and for the purposes therein noticed.

SAMUEL NULL.

No. 8973.—*Improvement in Railroad Car Trucks and Brakes.*

I do not claim the winding of the chain around the axle for the purpose of pressing the shoes against the wheels; neither do I claim the clutch nor the collar separately, for they have each been previously used. But what I do claim, and desire to secure by letters patent, is—

First. The method of operating the toggle joint by means of the rod, B, having the cam, C, upon it, which works in a slot in the bar, D, by which the clutch is thrown in and out of gear, or the cap, O, made to bear against the hub of the wheel, (b,) in combination with the compensating joints, P, constructed in the manner and for the purpose as shown and described.

Second. I claim the employment of the guards, (p,) (p,) (p¹) (p¹) vertical studs, (v,) and rods, (w,) (w,) arranged as described, for the purpose of enclosing the wheels and preventing them getting off the track in case of the breakage of a wheel or axle, in combination with the arms, (t,) and bolts, (s,) by which the trucks are suspended to the car-bed, in the manner and for the purpose as herein specified.

E. G. OTIS.

No. 8974.—*Improvement in Cooking Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The peculiar arrangement of the smoke flues, as shown in figs. 13 and 14, by which they are made to envelop the centre on all sides, and thus concentrate them in the smallest possible space.

Second. The combination with this machine of the key and valves, A, B, C, for ventilation and supply of air to the furnace from the room, as above described.

J. SMOLINSKI.

No. 8975.—*Improvement in Cast-iron Car Wheels.*

What I claim as my invention, and desire to secure by letters patent, is connecting the hub, A, and rim, B, of a solid cast-iron railroad wheel by a single plate, having two series of radical corrugations, G, G, and H, H, united by a hollow band, or single circular corrugation, I, J, substantially as herein described.

STEPHEN THURSTON.

No. 8976.—*Improvement in Machines for Jointing Staves.*

What I claim as my invention, and desire to secure by letters patent, is jointing the staves by means of cutters, M¹, M², set at an inclined position, and converging towards one another in the front, the said cutters having a motion given them perpendicular to the stave, for formation of the bilge or varying width of the stave, by means of the cam, n, framing,

Q, Q, and their accompanying parts, or devices equivalent thereto, operating substantially as specified.

DENNISON WOODCOCK.

No. 8977.—*Improvement in Fountain Pen-holders.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the valves in a fountain pen for the admission of air and regulating the flow of ink, with the slide or button, and with the spring and slide, in the manner above described, or in any other substantially the same.

CHARLES CLEVELAND.

No. 8978.—*Improvement in Corn Shellers.*

What I claim as new and my improvement, and desire to secure by letters patent, is the combination of the conical concave wedge, H, and the guard, G, with the concave wheel, E, for shelling corn, as herein described.

DAVID ELDRIDGE.

No. 8979.—*Improvement in Railroad Car Wheels.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is, in the construction of car wheels, the combination of the segmental ring and keys, constructed substantially as described, or their equivalents, for the purpose of facilitating the insertion of the ring or band of India rubber or other elastic material, between the central portion and the rim of the wheel, and as a means of fastening or holding the whole together, as herein set forth and shown.

NEHAMIAH HODGE.

No. 8980.—*Improvements in Copying Manuscript.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is—

First. The employment or use of the circular rack, D, which serves as a guide to the index, C, said rack having a rim, F, attached to its under surface and projecting outwards, with the necessary letters and characters stamped or placed upon it corresponding to the type placed on the periphery of the horizontal wheel, as specified.

Second. I claim placing or securing the type vertically to the periphery of a horizontal wheel having a rotating motion, and also a motion in the direction of its axis, by which, with the aid of the rack, D, and index, the required letters may be printed upon the paper, in combination with the roller, U, levers, V, X, and the shaft, W, or other equivalent device, for the purpose of operating upon the cylinder and adjusting it to allow for the different thickness of type on the wheel, as herein described.

Third. I claim the employment of the cylinder, G, upon which the paper is secured, said cylinder having a motion in the direction of its

axis, and also a rotating motion, said motions being communicated to it by the devices as shown and described, or in any other equivalent manner.

JOHN JONES.

No. 8981.—*Improvements in Violins.*

That which I claim as my improvement, and desire to secure by letters patent, is the construction of that portion of stringed musical instruments which receives the strain of the strings, when tightened in tuning, in such form or forms as will cause the line of that portion of the instrument to be lengthened instead of shortened, if the same be altered at all by the strain.

I also claim the hollow backed violin, or other stringed musical instrument of similar character, constructed substantially in the manner herein set forth.

WM. S. MOUNT.

No. 8982.—*Improvement in Revolving-Breech Fire-Arms.*

What we claim as our invention, and desire to secure by letters patent, is the construction of the sliding-crotch, substantially as described, to enable it to perform the double purpose of revolving the breech and wedging it up against the barrel, and the combination of the sliding-crotch and guard lever, constructed and arranged as specified, by which the breech is rotated, wedged forward, and the gun cocked by one motion, back and forward, of the trigger guard, or its equivalent, substantially as above described.

HENRY S. NORTH.
CHAUNCEY D. SKINNER.

No. 8983.—*Improvements in Smut Machines.*

What I claim, and desire to secure as my invention in the above described machine, is the arrangement in which the grain is fed in at or near the bottom of the cylinder, A, through which it is elevated by means of spirally inclined beaters, and discharged through the passage, or spout, K, in combination with the ascending blast from the fan, or blower, C; the same being arranged and operated essentially as above set forth and described.

G. S. PECK.

No. 8984.—*Improvements in Power Looms.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Connecting the rocker of each picker-staff, made and operated substantially as specified, with the bed on which it rocks by means of an interposed strap of leather, or other flexible substance, attached at the inner end to the bed, and at the outer end to the rocker, substantially as and for the purpose specified.

Second. Forcing the shuttle binders inwards against the shuttle while boxing, by a gradually increasing force, by means of arms on a rocker provided with a spring, which is acted upon by a pin on the connecting rod of the lay, substantially as described.

Third. Securing the raw hide pickers to the inner face of the staffs by means of a leather strap, or the equivalent thereof, embracing and binding the two together, substantially as described, to insure the firm union to resist the rapid blows, and to prevent pieces of raw hide from breaking and flying, as set forth.

RENSSELAER REYNOLDS.

No. 8935.—*Improvement in Cast Iron Car-Wheels.*

Having thus fully described my invention, I will proceed to state what I claim, and desire to secure by letters patent. I do not claim the concave plates, or sides, C, C, of the wheel, nor do I intend to limit myself to the precise form of such plates connecting the hub with the rim or tread of the wheel.

But I claim the partitions, or braces, D, D, connecting the rim, or tread, A, with the two plates, or sides, C, C, of the wheel; the said partitions, or braces, extending from the inside of the rim, or tread, radially, or nearly so, part of the distance towards, but not connecting with, the hub, as herein fully set forth.

D. R. RALL.

No. 8986.—Cancelled.

No. 8987.—*Improvement in Fire-Escape Ladders.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is forming or constructing a ladder with each successive step from the end or ends longer than the one preceding it, and connecting said steps with each other by links, B, made fast at one end to each step and the other end sliding through eyes, a, a, in the step above or below, so that the steps can all fold closely together, in the manner substantially as described.

JOHN C. FR. SALOMON.

No. 8988.—*Looms for Weaving Piled Fabrics without the Figuring Wire.*

Having now described the particular feature of my improvements in looms for weaving, and the mode or method of producing plain or figured goods or fabrics, I desire it to be understood that I claim as my invention—

Firstly. The novel mode or method of producing plain or figured goods or fabrics, having terry or looped surfaces of the kinds above described, by partially beating up certain picks of the shoot or weft threads, and afterwards further beating up or driving home those picks or shoots in order to cause certain portions of the terry-warp to pucker up in loops. But I do not confine myself to any particular number of picks or shoots of weft, but have described a method by which my improvements, in

producing plain or figured goods or fabrics having a terry or looped figure, may be accomplished as the number of picks or shoots of weft may be varied to produce a different appearance in the face of the fabrics woven under my patent, according to the desire of the weaver.

Secondly. I claim varying the forward stroke of the batten to produce the open or close beating up of the weft, substantially as described, in combination with the apparatus for holding the surface threads or yarns, and carrying them forward in the manner described, or any other, substantially similar, for the purpose of aiding in forming, in the loom, the loops of terry fabrics.

R. W. SIEVIER.

No. 8989.—*Improvement in Vertical Trip Hammers.*

We are aware that vertical trip hammers, elevated by friction rollers, are not new; neither are cams for regulating the elevation to which such hammers shall be lifted; and therefore we do not claim them. But what we do claim as our invention, and desire to secure by letters patent, is—

First. The recessed rollers, D, D, in combination with the plain rollers, D¹, D¹, and springs, H, or their equivalents, for controlling the operation of the lifting rollers; the projections on the said recessed rollers causing the shaft, B¹, lifting roller, C¹, and plain rollers, D¹, D¹, to recede or move from the rollers on the shaft, B, and thereby allow of the hammer fall; the whole being constructed and arranged, and operating substantially as herein described.

Second. The manner herein described of regulating the blow of the hammer by making the recesses, *b, c, d*, in the periphery of the rollers, D, D, of unequal lengths, and making the said rollers movable on their shaft, so that either projection can be brought opposite to, and made to act in combination with, the plain rollers, D¹, D¹, in the manner herein set forth.

his

PETER × STEBBINS.

mark.

JOHN HOLMES.

No. 8990 — *Improvement in Machines for Turning and Polishing.*

Having thus described my improvement in machines for turning cylindrical rods, what I claim therein as new, and desire to secure by letters patent, is the arrangement of a polishing belt for polishing circular surfaces in such manner that a bight of it shall pass round the article to be polished, and move concentrically, or nearly so, to the surface thereof, so as to finish the same rapidly, and without the danger of making flat places in its periphery, which is always so imminent when a round article is polished, by bringing it in contact with a polishing surface moving in a straight line.

I likewise claim the combination of the rotating tubular cutter for turning the rod with the polishing belts, which, while polishing one end of the rod, grasp it firmly and hold it from turning while its other end is under the action of the cutters, as herein set forth.

BENJAMIN J. TAYMAN.

No. 8991.—*Improvement in Engraving Surfaces.*

What I claim as my invention, and desire to secure by letters patent, is—

In the *first place*. The connecting of rhomboidal frames, or pentagraphs, in series, so that the one which first receives a movement from the hand, or other moving power, conveys its movement to a second, and this again, if required, to a third, and so on as far as the nature of the work to be done may need a high diminution to be carried.

In the *second place*. I claim as my invention, the placing rhomboidal frames, or pentagraphs, in pairs, so connecting each pair by a rod or bar at the working joints of each that a true geometric point of movement is presented upon every point or spot of such rod or bar, whether the said rod or bar be made to communicate motion to the cutting or other tools which act upon a fixed surface, or whether it be made to communicate motion to the surface itself, either plane or cylindrical, while the tools are fixed. These tools, which may be of any number convenient to apply, or required by the work, may be diamond or steel points, gravers, punches, drills, pencils, pens, or tubes for conveying colors.

In the *third place*. I claim as my invention, the conveying the movement of the above mentioned rod or bar, connecting two pentagraphs to a cylinder, or roller, in such manner that, when points or tools of any required kind are applied to the surface of the same, and in whatsoever direction, whether vertically, or on the sides horizontally, or beneath, each point or tool brought into contact with the cylinder produces thereupon the same figure or mark, of whatever kind, which it would produce if operating upon a plane surface.

In the *fourth place*. I claim as my invention, the construction of a frame called, in my specification, a ruling board, which, by transferring the weight of a loaded cylinder alternately from the sides or bearers of an external and internal frame, allows each frame in its turn to move backward or forward a distance regulated by screws or other similar means. In this manner, and by the application of a carriage or traversing point to one of these frames, lines may be ruled or engraved with perfect accuracy as to their distance one from the other.

ISAAC TAYLOR.

No. 8992.—*Improvement in process of Manufacturing Gutta Percha.*

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is the preparing of gutta percha for vulcanizing, by a preliminary separate heating of it to such a degree as to expel its volatile ingredients herein specified, which I find can generally be effected at the high temperatures from 285 to 430 degrees, Fahrenheit, substantially as herein set forth.

I also claim the process herein described of vulcanizing gutta percha by first heating it to a sufficiently high temperature to expel from it the volatile ingredients herein specified, which, it is believed, can be accomplished between 285 and 430 degrees, Fahrenheit, and then incorporating with it, substantially as herein specified, a hypo-sulphite, either alone or in combination with metallic sulphurets, or whiting, or magnesia, or with all of them together, and then subjecting the mixture to a temperature of

from 285 to 320 degrees, Fahrenheit; all the steps of the said process being performed substantially in the manner herein set forth; at the same time, desiring it to be understood that I disclaim the vulcanizing of gutta percha in all cases save when it has been prepared for the vulcanizing operation by the aforesaid preliminary heating.

JOHN RIDER.

No. 8993.—*Improvement in the construction of Retorts for Chemical Furnaces.*

I disclaim all processes to which these retorts are applicable, and all chemical compounds, and mode of working the same, which are herein described; and I disclaim all the apparatus shown herein except as follows: What I desire to secure by letters patent, is—I claim the retorts, H, formed by the arch, 7, and bed, 6, with the sides, 5, 5, and perforated with the cross flues, 10, 12, or 13, below the bed and above the arch of each retort; said retorts being formed and operating as herein set forth, and being used for any purpose for which they may be available.

JOHN AKRILL.

No. 8994.—*Improvements in the Manufacture of Plate and Window Glass.*

Having thus described my improved mode of making window or plate glass by machinery, what I claim as my invention, and desire to secure by letters patent, is—

First. The use of hollow chilled iron rollers in the manufacture of window and plate glass in connexion with the mode of heating them with charcoal or other combustible, placed inside.

Second. The combination of the grooves, *o*, *o*¹, with the strips and guides, *i*, *i*, and the set screws, *s*, for the purpose of regulating the width and thickness of the sheet of glass.

Third. The use of trucks for carrying off the sheets of glass as they pass from the rollers, as aforesaid.

Fourth. The combination and arrangement herein before described of the gates, flues, and furnace, in the construction of the polishing oven.

TER. CLARK.

No. 8995.—*Improvement in Processes for preparing Oakum.*

Having thus described our invention, we claim the treatment of "junk" by steeping or rinsing it in acidulous liquor, as described, for the purpose herein set forth.

JOHN A. CORMACK.

GEORGE CORMACK.

No. 8996.—*Improvement in Cow-Catchers.*

What I claim as my invention, and desire to secure by letters patent, is the wheel, A, and the guard, B, C, connected and arranged substantially as herein described, and for the purposes described.

COOK DARLING.

No. 8997.—*Improvements in Cop Spinning Frames.*

What I claim is as follows: I claim the toothed quadrant, y , the pinion, x , and its shaft, w , in combination with the two scroll cams, t , v , their chain, u , tubular shaft, f , and the clutch contrivance made with the spring-click, g , and one single detent or opening, d ; the whole being applied to the scroll shaft, L , and spur-gear, M , and made to operate substantially in the manner and for the purpose as herein before stated.

I also claim the ratchet wheel, w^2 , the arm, b^3 , and retaining pawl or click, c^3 , or any mechanical equivalent therefor, in combination with the balance-wheel apparatus, (viz: the arm, x^2 , the fly-wheel, y^2 , its shaft and pinion, a^3 ;) and the spur-gear, s^2 , having a positive motion, as described; the whole being for the purpose as specified.

And, in combination with the scroll shaft and its mechanism for effecting the upward and downward movement of the ring rail, I claim the mechanism for effecting the change of the downward to the upward motion of the said rail in an easy manner, and so as to prevent injurious strain when the spring-click, g , strikes into the recess, d , of the clutch flanch, c , the said mechanism consisting of the arm, f^3 , roll, g^3 , spring, h^3 , tube, i^3 , rod, k^3 , cam, l^3 , curved lever, m^3 , and spring, o^3 , (or their mechanical equivalents,) combined and operating together, substantially as herein-before described.

I also claim the improvement of so applying or combining the thread guide, G , or the guide-bar or rail, U^3 , to or with the ring-rail and the frame, that the said guide, or guide-bar, shall be movable, or made to move upwards and downwards while the ring-rail so moves, and this with a movement either equal to, or in accordance with, that of the ring-rail or a variable one, as circumstances may require; the same being for the purpose as specified.

And, in combination with the scroll, z , its chain and connexions with the ring rail, I claim a compensature mechanism or apparatus for regulating the action of the coping rail or rails on the said scroll, according to the leverage, or, in other words, for providing a compensation for the difference of leverage produced by the swell, as described; the mechanism employed by me, and the combination of which I also claim, consisting of the two cams, d^4 , e^4 , the pulleys, i^4 , k^4 , the chains, l^4 , m^4 , n^4 , and weights, o^4 , as applied together and to the frame, and operating substantially as specified.

And I claim the bent arm, l , and its projection, k , or other equivalent contrivance, in combination with the driving belt, shifting lever, or contrivance; the same being for the purpose as herein before set forth.

And I also claim my improvement in the construction of the thread guide, G ; the same consisting in making the opening of it straight on its rear side, substantially as seen at q^4 , r^4 ; the same being for the purpose as herein before explained.

And I also claim my improved or new combination of mechanism, by which a sudden or very quick rise of the coping-rail is effected in order to finish each upward movement, and this so as to wind as little yarn as possible at the nose or upper end of each conic layer composing the cop; the said combination consisting of the arm, l^2 , upon the scroll-shaft, L ,

the levers, k^2 , m^2 , the arm, c^1 , and the rollers, b^1 , p^2 , as applied and operated together, essentially as herein before specified.

GEORGE HENRY DODGE.

No. 8998.—*Smoke and Spark Deflector.*

What I claim as my invention, and desire to secure by letters patent, is the method of directing the discharge of smoke and sparks, or either, from the chimney of a locomotive, by combining therewith deflectors, substantially such as herein described; the apertures thereof being governed by a valve or shutter, substantially as specified.

ALBERT EAMES.

No. 8999.—*Improvements in Machinery for making Spoons, Forks, &c.*

What I claim is the employment, for trimming the edges and giving the ornaments to the blanks, of a pair of rollers, each of which is furnished with a cutting edge, and a device engraved within the same, and a space outside of said cutters, for the reception of the waste; said rollers being so worked and applied to each other, that the cutting edges of the one come in contact with and cut against the cutting edges of the other.

I do not claim simply a movable die; but what I do claim, is a movable die located within the pattern dies, so that spoons or forks, having various crests, names, or initials thereon, may be made by the same contour or device and edge pattern.

ALFRED KRUPP.

No. 9000.—*Improved process for making Axes.*

I claim the method of manufacturing axe poles by a process of which the following are its successive steps, in combination with others, as they are applied to the metal bar when heated, and prepared for manufacture, viz:

I. Spreading the iron bar at four points on its edges by strokes of a peculiar tool made for the purpose.

II. Forming half eyes across the bar at spaces equidistant from its centre, by strokes of a narrow and round-edged hammer.

III. Finishing the half eyes and making them equal and similar on a swaging tool.

IV. Cutting the bar partly through across its centre, and doubling together the halves of the bar so that the half eyes shall unite in correspondence with each other, and form the eye of the axe, completing the whole ready for welding the two halves of the pole together, substantially as the process is set forth in the above specification.

JOHN ORELUP.

No. 9001.—*Improvement in Reflector Lamps.*

What I claim as my invention, and desire to secure by letters patent, is a reflector lamp, constructed substantially as herein set forth, with a

case to contain a cooling liquid for the protection of the reflector from injury, as herein described.

JAMES H. PEASE.

No. 9002.—Cancelled.

No. 9003.—*Improvement in Wheel Cultivators.*

Having thus explained my improvements in wheeled cultivators, I will here state that I am fully aware that there are other modes of raising and lowering the frame containing the teeth of cultivators in use, particularly that patented to David B. Rogers, January 16, 1849, which consists mainly of a combination of a crank axletree extending across the centre of the frame, on the ends or cranks whereof are mounted the sustaining wheels. While I acknowledge the similarity of the lifting action of the cranks of the axletree to that of the pivoted segment levers used by me, and which I disclaim, yet I am not aware that Mr. Rogers is entitled to claim all means for effecting the same result, and I conceive that my improvements differ in material points from his, and which form the subject of my claims, as follows:

First. Mounting the carrying wheels upon axles, F, only when said axles, F, are made to project from pivoted segment-shaped levers at each side of the frame, in the manner and for the purposes specified.

F. P. ROOT.

No. 9004.—*Improvement in Seed Planters.*

Having thus fully described my improvements, what I claim therein as new, and for which I desire to secure letters patent, is, first, the seeding apparatus, constructed substantially in the manner and for the purposes set forth, consisting of the cup (*i*) and receivers, the plate, (*d*), gate, (*e*), and their attachments.

I also claim the mode of putting the cups into motion, and stopping them, by shifting the pitman, (*k*¹), as described, on, to, or from the eccentric, (*l*), by the windlass, in the manner set forth.

I also claim raising and holding the teeth by the employment of the apparatus for turning and holding the windlass, consisting of a crank and bevel-wheels, as described; so that one man can easily raise the teeth to any desired height, and to a much greater range than can be done conveniently by levers, or similar devices, and attach it in that position by the revolving clutch, which meets, when at the proper height, with the crank which it fastens.

J. P. ROSS.

No. 9005.—*Improvement in Harvesters.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the curved fingers, O, in combination with the rivets, *n*, projections below the sickle,

N. by which means the sickle is prevented from being clogged or bound, substantially as described.

G. H. RUGG.

No. 9006.—*Improvement in Seed Planters.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the construction of the serpentine driving cam, E; the cam being formed of two parts, *f*, *g*, and placed on the axle, F; the part, *f*, of the cam being fixed firmly to the axle, and the part, *g*, moving freely thereon, and secured, at the desired point, to the axle by the set screw, *h*, each part of the cam being formed of a collar having a zig-zag or serpentine thread, or projection, upon it; the friction roller or bulb, G, at the lower end of the lever, D, fitting between the threads or projections, which act against it as the cam revolves, and give a reciprocating motion to the shove rod, C, substantially as shown and described.

B. D. SANDERS.

No. 9007.—*Improvement in Hay Rakes.*

What I claim as my invention, and desire to secure by letters patent, is the construction of the axle and rake head with hinges connecting it with the platform, in combination with the draught strap, to raise and depress the rake teeth, in the manner and for the purpose set forth.

ZENAS SANDERS.

No. 9008.—*Improvement in the construction of Soap-Boilers.*

Having thus described the construction and operation of my apparatus for heating, boiling, and mixing by steam, I desire it to be understood that I do not claim to be the original inventor of the application of steam to heating, boiling, and mixing. But what I do claim as my invention, and desire to secure by letters patent, is the combination of the steam-jacket, *c*, *c*, tubes, *p*, *p*, and agitating rods, *f*, *f*, for transmitting and equably diffusing heat through soaps and other similar substances, where it is difficult to keep up a uniform heat throughout the mass, substantially in the manner set forth and shown.

JNO. R. ST. JOHN.

No. 9009.—*Improvement in Rat Traps.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the pulley, G, *f*, cords, H, I, hook, *g*, and inclined tilting passage, F; the whole being arranged as described, and operating in combination with the tub, K, having a tilting door, *m*, arranged on the top of the same, and a guard, M, placed round the door, *m*, in the manner and for the purpose herein specified.

JOHN J. VEDDER.

No. 9010.—*Improvement in Grease Cocks.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is the inclined discharge passage, *h*, of varying area, constructed, arranged, and operating with respect to, and in connexion with, the hollow cylinder and its aperture, *a*, in the manner and for the purpose herein set forth.

ROB. M. WADE.

No. 9011.—*Improvement in Fastenings for Garments.*

I claim the combination of the catch-plate with the plates above and below it, as shown and described.

I claim the perforated bar for preventing the instrument from turning; the whole being arranged and acting substantially as set forth.

ELBRIDGE G. BELKNAP.

No. 9012.—*Improved valves, or gates, for Oblique Float Paddle Wheels.*

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is the series of radial winged and pivoted gates, *F*, for preventing the water acted on by the paddles being moved laterally as they move through the water, and opening to deliver the water freely at the proper time, arranged and operating substantially as described.

J. C. CARNCROSS.

No. 9013.—*Improvement in Mill for Crushing Quartz.*

Having described the manner in which I construct my machines, what I claim as my invention, and desire to secure by letters patent, is—

I claim giving motion to the balls between the two plates or disks, in the manner and for the purpose substantially as above specified.

J. W. COCHRAN.

No. 9014.—*Improvement in Piano-Fortes.*

I do not claim as new metallic frames, nor bridges; neither the up-bearing of the strings, nor bringing the strings to an equal length, other than in connexion with my arrangement. What I claim is making the perforated bridge for the up-bearing of the strings a part of the solid arched frame or plate, as described.

WM. COMPTON.

No. 9015.—*Manufacture of Granular Fuel from brush wood and twigs.*

I claim the granular fuel produced from brush-wood and twigs, by cutting the same into lengths about equal to its average diameter, as herein described, as a new manufacture.

REUBEN DANIELS.

No. 9016.—*Improvement in Machines for making Cigars.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the manner herein described of making cigars, viz: by combining with the cutters and followers which cut off and feed in the requisite quantity of tobacco for each cigar, the rollers for rolling up the fillers and putting on the wrappers, said rollers having the requisite arrangement of parts, so as to open to receive the material, and close to form the cigar, and again open to deliver the finished article, in the manner substantially as herein described.

I also claim the making of the roller which feeds in the wrapper of less diameter than the rollers which form the filler, so that the filler may move at an increased velocity over that of the wrapper, for the purpose of more evenly spreading out the wrapper, and winding it more tightly upon said fillers, substantially as herein described.

WILLIAM DAWSON.

No. 9017.—*Improvement in Cast-iron Car Wheels.*

What I desire to secure by letters patent, is the double reversed corrugations, *d* and *e*, connecting the rim and hub, formed and acting as described and shown, and the combinations of these corrugated parts with the annular cylinder, *c*, between them and the hub, as described and shown.

PETER DORSCH.

No. 9018.—*Machine for polishing Daguerreotype Plates.*

I do not claim the platform, L, nor frame, K; neither do I claim the reciprocating bed, B, separately. But what I claim as new, and desire to secure by letters patent, is the horizontal reciprocating bed, B, operated in the manner as described, or in any other equivalent way, in combination with the frame, K, for the purpose as herein specified.

TOWNSEND DURYEA.

No. 9019.—*Improvement in Alarm Locks.*

Having thus described the nature of my inventions, their construction and operation, that which I claim as new, and desire to secure by letters patent, is the combination of the slide and button, constructed for the purpose of making and breaking the connexion of the bell and hammer with the bolt, catch, latch, or fastening of the lock, substantially in the manner I have described.

I also claim the combination of the lever, H, with the bolt and catch or latch, of the lock, by means of which the movement of the catch is prevented, when the bolt is projected, and the catch is drawn by the same key which has drawn the bolt; constructed and operating substantially in the manner I have described.

CHARLES FLEISCHEL.

No. 9020.—*Improved Machine for making Sheet Metal Tubes.*

What I claim as my invention, and desire to secure by letters patent, is such an arrangement and combination of the mandrel, and the enclosing compressing rollers and their operating accessories, as will, after a tube has been formed upon the mandrel, enable me to depress the lower rollers clear of the mandrel, and by the same movement depress the mandrel, and retain it in a horizontal position between and clear of the four compressing rollers, with one of its ends left free and unconfined, to facilitate the removal of the said tube from the mandrel, substantially as herein set forth.

I also claim the placing of the movable collars, O, O, upon the compressing rollers, and the movable collar, l, upon the mandrel, for the purpose of producing an enlargement at the end of the tube, without causing straining or friction, substantially as herein set forth.

JEHIAL T. FARRAND.

No. 9021.—*Improvement in preparing Cotton Yarn for the Manufacture of Duck and other Coarse Fabrics.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the process herein described of preparing yarn for coarse cotton goods, but more particularly for cotton duck, by passing them through between moistening rollers, or otherwise wetting them, and then passing them over or around grooved or plain heated steam pipes or rollers, for removing their elasticity, smoothing and condensing them, whilst in a state of proper tension, substantially as herein described.

HORATIO N. GAMBRILL.

No. 9022.—*Improvement in Organs.*

What we claim as our invention, and desire to secure by letters patent, is the use of a separate air chamber, for supplying wind to all the pipes of a single stop, as herein described, and as opposed to the old method of having a single air chamber supply all pipes of the same note or letter in the different stops.

And, finally, we claim the combination of air chambers, such as are herein described, with valves communicating with the several pipes, and operated by mechanical agencies, such as are shown in the foregoing description, explanations, and the accompanying drawings, substantially as herein described.

ALBERT GEMUNDER.
GEORGE GEMUNDER.No. 9023.—*Improvement in Carriage Axles.*

What I claim as my invention, and desire to secure by letters patent, is making the box in two or more parts, with a recess to embrace a collar on the journal part of the axle, or the equivalent thereof, substantially as described, when this is combined with the mode of securing together the sections of the said box, by fitting it within the hub or pipe-box, and

securing it therein by a nut, which embraces the several sections, and which secures them within the hub or pipe-box, substantially as specified.

KINGSTON GODDARD.

No. 9024.—*Improvement in the motion of the Lay in Looms.*

What I claim as my invention, and desire to secure by letters patent, is giving the lay of a loom one or more long beats for the shuttle to pass, or to insert a wire into the web, and as many short beats as may be necessary or desirable to strike up each thread of weft and wire with a toggle joint, operated by a sweep, or some other device, connected to or operated by a crank, cam, or otherwise.

JOHN GOULDING.

No. 9025.—*Improvement in Derricks.*

What we claim as our invention, and desire to secure by letters patent, is placing the axis upon which the jib, F, swings in a position deviating from the vertical, so as to cause the jib to have a tendency to swing in one direction, and applying the hoisting tackle, or part of the hoisting tackle, in any manner, substantially as described, to the side opposite to the direction in which the jib tends to swing, so as to make the hauling on the said tackle, or part of the tackle, swing the jib in the opposite direction to that in which is its tendency to swing when left free.

SELAH HILL.

CHARLES M. DUPUY, Jr.

No. 9026.—*Improvement in Imitation Stone.*

Having thus described the nature of my invention, and the manner of performing the same, I would have it understood that I do not confine myself to the details, as herein described, so long as the peculiar character of either part of my invention be retained; but what I claim is the production of ornamental surfaces on picture frames, inkstands, and other articles, and on walls and other places, and on different matters, by applying thereto colored silk waste, or other colored fibrous substances, combined with cement, in such manner that the colored silk waste, or other colored fibrous matters used, shall produce a veined or marbled character.

CHAS. ILES.

No. 9027.—*Improvement in Preparations of Archil.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is mixing and treating lichen rocellus with a volatile alkali, urine, and clear and fully saturated lime-water, in the proportions and after the manner herein substantially set forth, for the purpose of producing a coloring matter known as archil.

LEON JAROSSON.

No. 9028.—*Improvements in Machines for Jointing Staves.*

We claim as our invention as follows: In combination with each carriage or frame, S, T, we claim the clamping contrivance or mechanism by which such carriage is held firmly in position, after being moved outwards by a stave, and while such stave is being reduced on its edges, or has the bilge formed on it, such contrivance or mechanism consisting of the movable bar, *w*, the rocker-bar, *x*, the lever, *z*, connecting-rod, *b*¹, and the clamping lever, *c*¹; the whole being applied to each carriage, and made to act on it as specified.

And in combination with the lever, *v*¹, as applied and operated in the manner above set forth, we claim the mechanism by which the fulcrum of the lever is caused to move longitudinally, or towards the cam, for the purpose of producing the effect equivalent to shortening the rear arm of the lever, and lengthening the front arm thereof, whereby the cutter-head is made to depart further from the middle of the machine, so as to increase the curve of the bilge, or make it, as it were, with a diminished radius, such mechanism being the stationary slotted plate underneath the carriage or frame, S or T, as arranged and made to operate essentially as described.

And in combination with the cutters which produce the bilge curve, we claim the self adapting planes or plane irons, arranged in front of such cutters, and for the purpose of jointing or smoothing the edge of the bilge, as explained.

DAVID ROOD.

No. 9029.—*Improvement in Saddles.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is the employment of woven ratan, cane, whalebone, or other similar elastic substance, in the construction of the seats of riding saddles, said seats so constructed being attached to and combined with the saddle-tree, in the manner and for the purposes above set forth.

WM. S. KENNEDY.

No. 9030.—*Improvement in manufacturing Wooden Type.*

Having thus fully described my invention, I do not claim any of the parts separately; but what I do claim as new, and desire to secure by letters patent of the United States, is the combination and arrangement of the lever or crank, D, with an inclined plane on its side, the screw, C, connected to the square bar, the band with its screws on the end of the bar, to hold the dies in place, the feeding lever, spring, dog, and tube, or grooved piece on the side of the press, to move and guide the type wood to the place for receiving the impression, in a press for forming wooden type, as herein described and shown in the drawings hereto annexed.

JOHN McCREARY.

No. 9031.—*Improvement in Harvesters.*

I do not claim as new the application of a rake having a reciprocating movement, for the purpose of gathering the grain into gavels, nor yet do

I claim causing teeth, *m, m*, to travel between the slats forming the receiving table, neither vibrating the said teeth in the manner specified, as such has been before done. But what I do claim as my invention, and desire to secure by letters patent, is the application of a rake cleaner, *W*, constructed similarly to the gate, *V*, but not acted upon by springs, it being loosely suspended, and so operated by the back motion of the rake, that its teeth work upwards between the teeth of the rake, throwing the grain cleared therefrom towards the delivery end or gate *V*.

WILLIAM McLAGAN.

No. 9032.—*Machine for Wiring Blind-Rods.*

Having thus fully, clearly, and exactly described my invention, what I claim as new, and desire to secure by letters patent, is—

First. The combining of clenching mechanism, substantially such as herein described, with devices for feeding the rod and the wire, and piercing the former, and severing, forming, and inserting the latter; whereby I make and firmly attach blind staples in their proper positions, substantially as herein described.

Second. I also claim the pivoted clencher, arranged and actuated substantially in the manner herein specified.

FREDERICK H. MOORE.

No. 9033.—*Improvement in Hanging Mill-Spindles.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the bail or balance rine, *a*, (of the usual shape,) with the cock-eye, *d*, of the spindle, by means of the inverted bearing cup, *b*, whose shank presses up through and is made fast in the centre of the said bail, and whose head is enclosed in the inverted socket, *e*, which rises above and is made fast to the top of the spindle, substantially as herein set forth.

W. H. NARACON.

No. 9034.—*Improvement in Bedstead Fastenings.*

What I claim as my invention, and desire to secure by letters patent, is securing the rail to the post by means of pin, *C*, key, *D*, and plate, *E* in the manner substantially herein set forth.

A. S. NEWHOUSE.

No. 9035.—*Improvement in Meat Cutters.*

Having thus fully described my improvements in meat cutters, what I claim therein as new, and for which I desire to secure letters patent, is the mode of attaching the knives herein described, by which they can be taken out and replaced expeditiously.

JOSEPH POTTS.

No. 9036.—*Improvement in Ore Stampers.*

Having thus fully described my improved stamper, and its mode of operation, what I claim therein as new, and for which I desire to secure

letters patent, is the employment of weights upon the stamper, substantially as described, to keep up a uniformity of weight as the stamper wears, as herein set forth.

THOMAS REANEY.

No. 9037.—*Improvement in Hand Seed Planters.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the method of conveying seed from the seed-box, A, and depositing it in the furrow or hill, substantially as herein shown and described, viz: by having the rods, D, attached in any proper manner to a staff, C, said staff and rods passing vertically through the bottom of the seed-box, the upper part of the rods having cups (*b*) attached to them by elastic joints, the cups having spurs, *d*, projecting from them, which cant or turn over the cups when the staff and rods are raised, and throw the seed into the tops of the tubes, when they catch under the projections, (*e*), the lower ends of the rods forcing out the seed from the tubes when the staff is depressed, and the spring (*c*) retaining it when the staff is raised.

GELSTON SANFORD.

No. 9038.—*Improvement in Harvesters.*

First. We claim as our invention the arrangement of the bridges beneath the platform, in combination with chain-bands, having accommodating knee-formed fingers or rakers working on pivots, and attached thereto, substantially as described.

Second. We also claim working the vibrating cutter between an under and an upper open guard or finger, as described and represented.

WM. SCHNEBLY.

THOS. SCHNEBLY.

No. 9039.—*Improvement in Label Cards.*

I claim the manufacture of label cards, or tickets of cloth and paper stuck and pressed together, substantially as above described.

JAMES SHARP.

No. 9040.—*Improvement in Machines for Making Cordage.*

Having thus described my improved rope and cordage-making machine, what I claim therein as new, and desire to secure by letters patent, is—

First. The arrangement and combination of the parts by which the machine is enabled to stop itself when the sliver becomes exhausted, or nearly so, in any one of the cans, viz: by means of the movable bottoms, *c*, within the cans, connected to the rods, *d*, which pass through the tubular journals of the can-frames, and descend below the disk, II; the arm, *q*, fixed near the centre of the spring-shaft, P, and the arm, *r*, fixed near the projecting end of the said shaft; and the arm, S, projecting from the side of the machine; or the respective equivalents of the said parts, when arranged, combined, and operating with each other, and with the

fixed pulley, Q, and the loose pulley, R, on the shaft, E, substantially in the manner herein set forth.

Second. I also claim the corrugating of the sides of the cans to prevent the sliver from rising therein, when it is pressed into the same, by which a much larger quantity of sliver can be placed in them than can be placed in cans of the usual form.

Third. In combination with the said corrugations in the sides of the cans, I also claim the perforating of the sides of the same for the purpose of allowing the air to escape therefrom, when the sliver is compactly pressed into the cans.

Fourth. I also claim the inserting of a wing (or wings) into each of the cans, for the purpose of preventing the combined annular and rotary motion which is imparted to the cans from twisting and kinking the slivers as they rise to the upper tubular journals of the can frames, substantially as herein set forth.

DAVID PERRY.

No. 9041.—*Improvement in Sewing Machines.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The combination of the bobbin, F, for carrying one thread, with a rotating hook, which is of such form, or forms part of a disk, or its equivalent of such form, as to extend to the loop on the other thread, and pass it completely over the said bobbin, whereby the two threads are interlaced together; the parts being arranged and operating in any way substantially as herein set forth.

ALLEN B. WILSON.

No. 9042.—*Improvement in Machine for stamping Ores.*

I do not claim as my invention the combination of the drum or pulley, K, the strap, I, the frame, H, its catch-lever, and the cam at the top of the gins, as employed to elevate the ram, or weight, and disengage it so as to enable it to fall down on the bed, or mortar; nor do I claim the arc, g^1 , of cogs, and the two gears, N, N¹, (applied to their two shafts,) for the purpose of alternately imparting a rotary motion to each shaft, as I am aware that such are old contrivances; but what I do claim as my invention is the combination and arrangement of the said arc of cogs and its wheel, the two spur wheels, N, N¹, the shafts thereof, the drums, K, K¹, straps, I, I¹, frames, H, H¹, their catch levers, and disengaging cams; the whole being applied to the two weights, or rams, and made to operate or alternately raise them, disengage them, allow them to fall, and afterwards re-engage them all, as specified.

And in combination with the two spur gears, N, N¹, and the arc gear, g^1 , P, I claim the cam, k, on the wheel P, the two spring catches, i, i, and the two pins, or studs, h, h¹; all arranged, applied, and made to operate substantially in manner and for the purpose as herein-before specified.

VIRGIL WOODCOCK.

No. 9043.—*Improvement in Friction Clutch.*

I do not claim as my invention making a loose pulley fast with its shaft by means of the friction of internal segments; but what I do claim as my invention, and desire to secure by letters patent, is operating the segments for producing friction on the inner surface of a loose pulley by means of a thimble on the shaft of the pulley, connected with the segments by diagonal rods or braces, substantially as described.

WENDELL WRIGHT.

No. 9044.—*Improvement in detaching harness from Horses.*

What I claim as my invention, and desire to secure by letters patent, is the manner of constructing the hames, the saddle-tree guard, and stop, as herein-above described, so as to enable the driver at any time to detach the horse or horses from the harness and buggy, carriage, or other vehicle, by a single pull or jerk of a cord.

GEORGE YELLOTT.

No. 9045.—*Machine for washing and amalgamating Gold, etc.*

What I claim as my invention, and desire to secure by letters patent, is the manner herein described of constructing the hollow revolving cylinder, B, to wit: with brackets, D, along its periphery, and an inner partition, E, near its discharge end, C¹, for separating, washing, and causing gold to amalgamate, in the manner herein described.

ALEX. BARCLAY.

No. 9046.—*Improvement in Valves for Pumps.*

What I claim as new, and desire to secure by letters patent of the United States, is the device consisting of a cylindrical box-valve, *f*, with its induction openings, *h*, *h*¹, and its side or water-way openings, *g*, *g*¹, and its eduction openings, *i*, *i*¹, and of a valve-chest adapted thereto, with its induction, and side or water-way, and eduction openings corresponding to the openings in the valve-box; the whole, in connexion with the usual water-ways and barrel of a double-acting pump, furnishing the parts necessary to the operation of such a pump, thus obtaining from a single valve, deriving its motion from the out-flowing and in-flowing currents, the result for which several separate valves have hitherto been needed, substantially in the manner described.

J. R. BASSETT.

No. 9047.—*Improvement in Bomb-Lance for killing Whales.*

What I claim as my invention is as follows: I claim the mode of sustaining the fuse rope in the fuse-tube, and preventing the fire of the charge of the gun from passing by the fuse rope and into the bomb, viz: by the two metallic tubular plugs, *h*, *i*, cast around the ends of the fuse-rope and into the fuse tube, and arranged substantially as specified.

I do not claim the application of wings or feathers to a shaft or rod, to direct its passage through the air; but what I do claim is my improved

mode of making them, viz: of vulcanized India rubber, or other equivalent, so that they may not only resist the destructive powers of the explosion, but be folded down on the shank, when put into a gun-barrel, and have the property of elasticity, such as will enable them to unfold themselves after being discharged from the gun.

CHRISTOPHER C. BRAND.

No. 9048.—*Improvement in Heat Radiators.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the flue, I, I, the cylindrical flue, the flue, H, the receiver, G, the pipes, L, L, and the open space, P; all operating in the manner and for the purpose substantially as herein described and set forth.

MERRILL COLVIN.

No. 9049.—*Improvement in Horse Powers.*

What I claim, and desire to secure by letters patent, is—

First. The method of combining and arranging the two pallets, as connected by a joint with the levers, in such a manner that, by the action of the teeth of the main wheel against the end of these pallets, an oscillating motion is given to the levers; and by such motion, and the aid of the connecting rods and cranks, a rotary motion is produced. But I do not claim the application of connecting rods and cranks for producing such rotary motion.

Second. I also claim the method of combining and arranging with the parts above claimed the three eccentric wheels running together, in such a manner that, while the motion of the middle one is uniform, that of the other two, on which the cranks act, are irregular, alternately; that irregularity being required for the purpose of giving to the middle eccentric wheel a direct motion, not subject to being reversed, as it would be by using common wheels; all as herein-before described, for the purposes set forth.

Third. I do not intend, by the foregoing claim, to limit myself to the application of this invention to horse powers, but to apply it, as I may think proper, to other purposes for driving machinery when speed is required.

AARON D. CRANE.

No. 9050.—*Improvement in Dumping Wagon.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the adjustable bar, or incline, K, and screw, O, in combination with the rollers, I¹ and I, I, all operating in the manner substantially as shown and set forth in the foregoing specification and accompanying drawings.

J. V. CROSS.

No. 9051.—*Improved Wrought Nail Machinery.*

Having thus described the nature of my invention, what I claim as new, and desire to secure by letters patent, is as follows:

First. I claim the combination of a series of hammer faces with grippers, having both a rotary and progressive motion, and so arranged as to convey the blank between the several pairs of faces successively, at the same time revolving it so as to present different sides successively to the action of the hammers.

Second. I claim such an arrangement of the several hammer faces which act successively upon the blank, with regard to the distance of the lines in which they respectively move from the line in which the grippers move, that when the grippers move forward in said line, thereby conveying the blank from one pair of faces to another, the successive strokes which it receives will fall on different points, thereby reducing different parts of it successively to the required size.

Third. I claim, in combination with such an arrangement of the faces, with respect to the grippers, such a graduation in the nearness with which the several pairs respectively approach when they strike, that the several parts of the blank upon which they respectively act will be reduced to different sizes, and that the combined effect of the whole will be to reduce the nail to the proper form.

Fourth. I claim the combination of the two kinds of faces, broad and narrow, with grippers so arranged as to present the blank to the action of the narrow ones until it is suitably elongated, and subsequently to that of the broad ones, to receive a finish.

Fifth. I claim the arrangement of a set of grippers upon the interior of a circular hub or frame, in combination with the hammers placed in or near the centre of the circle in which they are arranged.

Sixth. I claim adjusting the grippers by means of a spring, or its equivalent, so arranged as to press them towards the hammers to their proper place, allowing them to recede as far as the lengthening of the nail requires while the hammers are acting, and causing them to return again when the hammers are withdrawn.

Seventh. I claim such a combination of stops for limiting the approach of the hammers to each other with cams, or their equivalents, for forcing them together, as do diminish the inequality, which unequal resistance between the faces has a tendency to cause the springing of the parts which produce the stroke; thereby rendering the effect of the strokes more uniform.

DANIEL DODGE.

No. 9052.—*Improvement in method of ascending Inclined Planes.*

I do not claim the placing of a third rail in the centre of the track, against the sides of which wheels are made to press or grip, for the purpose of enabling a locomotive to ascend inclined planes. But what I do claim, and desire to secure by letters patent, is the rail constructed with the projecting flange, forming a clear space for friction wheels to revolve as described, in combination with the friction wheels, *g, g,* arranged and operating in manner substantially as set forth, giving to the engineer the power of increasing the adhesion of the engine at his pleasure, and thereby insuring that it will, at all times, work up to its steam capacity.

JAMES S. FRENCH.

No. 9053.—*Improvement in Sewing Machines.*

Having thus described our improved sewing machine, we shall state our claim as follows: What we claim as our invention, and desire to have secured to us by letters patent, is the arrangement above described in a sewing-machine, for feeding the cloth along, consisting of a notched bar, which has a vertical or up-and-down motion, for fastening the cloth upon, and releasing it from, the notches of said bar, by striking it against a yielding plate, and a lateral motion, or motion forward and back, for feeding the cloth along after each stitch, substantially as above set forth.

We also claim a circular instead of a straight horizontal needle, for spreading the loops of the thread of the vertical needle, substantially as above described.

WM. O. GROVER.
WM. E. BAKER.

No. 9054.—*Improvement in Foot Cars.*

Having thus fully described my invention, what I claim in the construction of foot-cars as new, and desire to secure by letters patent, is suspending each of the treadles upon which the passenger operates from the same side of the axle, the treadles being so arranged as to rotate the axle, whether they be applied both together or one at a time alternately, and through said axle give motion to the driving wheels, substantially as herein described.

I also claim combining with the axle and driving wheels the fixed ratchets and spring pawls, for the purpose of giving the driving wheels a continuous motion in one direction, whilst the axle may have an intermittent motion in the same direction, as herein represented and described.

NEHAMIAH HODGE.

No. 9055.—*Improvement in Clover Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is the hinged board, A, in combination with the movable cutter frame and the platform, C, as herein set forth.

Second. I claim the shield, F, the same being constructed, applied, and operated in the manner and for the purposes herein set forth and described.

Third. I claim the combination of the lever, *f*, and lever, *n*, the latter being constructed at its posterior end with slot and pivot pin, to admit of antero-posterior movement, and at its anterior end with supports for cogged gearing; so that while the levers raise and depress the cutters, they also contribute to connect and sustain the gearing for driving the cutting reel.

JOHN KRAUSER.

No. 9056.—*Improvement in divided Railroad Car Axles.*

I do not claim surrounding a divided axle with a tube; neither do I claim making semi-axles of a conical form; but what I do claim as my

invention, and desire to secure by letters patent, is the conical semi-axle, *a*, in combination with the tube, *A*, constructed as described, for the double purpose of giving the greatest strength to the axle itself, with a given weight of metal, and of increasing the strength of the tube in the centre, without a corresponding increase of the external diameter thereof.

Again, I do not claim a hollow divided tube, attached rigidly to the wheels, and revolving upon an undivided axle, to which it is secured by flanges, rings and bolts.

But what I do claim is the peculiar manner of coupling the wheels and semi-axes to the hollow tube surrounding said axle, by the use of the groove in the hub of the wheel, into which the flange of the tube enters, in combination with the ring, *n*, secured to the wheel by bolts as described, for the three-fold purpose, first, of enabling the wheel and its semi axle to revolve independent of the tube, and of strengthening the axle at its weakest point, where it enters the wheel, and, lastly, to prevent the end of the tube from splitting out, by thus removing half the strain from the lower to the upper side, in the manner above set forth.

WM. S. LOUGHBOROUGH.

No. 9057.—*Improvement in steps and bearings of Mill Spindles.*

Having thus fully described my invention, I would observe that I do not claim upbearing or sustaining the gudgeons of shafts, or other revolving bodies, by liquids when packing and force pumps are used for giving the desired pressure to sustain the weight of said shaft or other body and to prevent the lubricating liquid from overflowing.

But what I do claim as new, and desire to secure by letters patent, is lessening the friction of mill spindles and other heavy revolving bodies by upbearing and sustaining the gudgeon of the same upon any lubricating liquid, by the use of the hollow lighter or case, (*b*,) with the case, (*a*,) for containing said liquid, upon which said lighter revolves, or their equivalents, said lighter being proportioned to the weight it is designed to sustain, and arranged and connected with the shaft as described, or in any other manner substantially the same in principle, operation, and effect.

THEODORE S. MINNISS.

No. 9058.—*Improvement in Planing Machines.*

I do not claim as my invention the combination of one or more stationary planes so arranged that, while one or more remove the rough surface of a board, the rest or last shall finish or produce on it a smooth plane surface; but I claim, when placed so as to operate on one side of a board, a cylindrical rotary cutter, for roughing and reducing, which cuts from the unplanned to the planed surface, in combination with a stationary cutter placed behind, and as near thereto as may be, for finishing, without pressure rollers, or pressure bars of any kind; whereby I am enabled to operate with greatly diminished power, and the rotary cutter will cut up and throw off the shavings from the stationary cutter, and the boards will be reduced to an equal thickness and a smooth surface.

N. G. NORCROSS.

No. 9059.—*Improvement in Machines for preparing Flocks, &c.*

What I claim as my invention, and desire to secure by letters patent, is—

Firstly. The construction and arrangement of the fan-wheel, and its combination with the elastic grinding bed or grater, constructed as described, or in any other manner substantially the same, for effecting the feeding, separating, and discharging of the flocks and other matters mixed therewith, in the manner described.

Secondly. I claim supporting or attaching the concave grater, or grinding bed, to the frame by springs or other elastic material, for the purpose set forth.

Thirdly. I claim the reflectors, and their arrangement in the machine, in the manner and for the purpose set forth; the whole being combined and operating substantially as described herein.

JOHN R. PETERS, JR.

No. 9060.—*Improvement in Fluid Metres, &c.*

What I claim as my invention, and desire to secure by letters patent, is in combination with a force-pump and a piston or plunger, actuated by water or other fluid forced from the same, the air vessel and the drop-valve, arranged and actuated substantially as described, whereby the measuring piston or plunger is caused to pause at the end of each stroke in either direction, substantially in the manner and for the purposes described.

I also claim supplying the pump-chamber, A, and the metre chamber, K, through valves, arranged and operating as described, and loaded in proper relative proportion, or supplied from heads of proper proportional height, for the purpose herein described; height of head of supply, or amount of load on the valves, being equivalents, producing the same results.

I also claim actuating the counter through the agency of a rack and a segment cog, arranged substantially as described, whereby any movement of the metre, piston, or plunger less than a whole stroke, is counted up in proper proportion by the counter.

WILLIAM HENRY LINDSAY.

No. 9061.—*Improvement in Ploughs.*

Having thus fully described and represented my improved plough, what I claim therein as new, and desire to secure by letters patent, is combining a plough and harrow in one implement—that is to say, attaching a comb or rake, or its equivalent, to the rear and upper end of the mould board, to comb out and pulverize the soil on the bottom of the furrow as it is turned up, substantially as set forth.

DAVID SWARTZ.

No. 9062.—*Improvement in Time Pieces.*

What I claim as my invention, and desire to secure by letters patent, is insulating or separating the clock-frame from all contact with the case,

by intermediate packings of India-rubber, or other non-conductor of sound, substantially as shown and set forth.

S. R. WILMOT.

No. 9063.—*Improvement in Mill-Stone Dress.*

Having thus fully described the nature of my invention, I wish it to be understood that I do not claim the polishing of one stone by rubbing it with another of the same material; neither do I claim polishing the face of mill-stones by rubbing it with another stone, as both these have been essayed. But what I do claim as my invention, and desire to secure by letters patent, is, first, the rounding off of what is usually termed the feathered edge of mill-stones for grinding buckwheat, so as to present a round, smooth surface, instead of a cutting edge, as herein set forth; and this I claim whether said furrows are polished, sharpened, or straightened by rubbing the same with a burr-block after said furrows have been roughed out with a pick or other tool, or by any other means substantially the same.

WILSON AGER.

No. 9064.—*Improvement in Hulling Buckwheat.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the method herein described of scouring or hulling buckwheat by passing it through between horizontal stones, the runner having furrows on its face, draughted substantially as herein represented, and cut in the direction of the motion of the stone, with the design of keeping the grains from leaving the stones too fast, and for rotating them both on their short and long diameters; and the bed-stone left without furrows, in the manner and for the purpose herein set forth.

WILSON AGER.

No. 9065.—*Improved Sail Hank.*

Having described the nature of my invention, what I claim, and desire to secure by letters patent, is the construction of a *divided hank*, so formed that one part, A, may embrace the stay, and the other part, D, enter the eyelet of the sail, and the parts be connected together by the socket, B, or one receiving the shank of the other, and be confined by the bolt, E, for the purpose of securing sails to the stay, substantially in the manner set forth and shown.

SAM'L BARKER.

No. 9066.—*Apparatus for Propelling Vessels.*

What I claim as of my own invention, and desire to secure by letters patent, is the combination of the radius bars, upright levers, cranks, horizontal levers, carrying paddles, and curved slots, arranged with respect to each other, and connected and operating substantially in the manner set forth herein.

MATHEW AUGUSTUS CROOKER.

No. 9067.—*Improved Revolving Last-holder.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The revolving stock, H, B, K, L, constructed and arranged, and operating in the manner substantially as and for the purpose herein set forth.

Second. The revolving last holder, M, N, O, attached to the revolving stock, H, B, K, L, and having an adjustable rest, or arm, P; the whole being constructed, arranged, and operating in the manner substantially as and for the purpose herein specified.

HENRY G. DE WITT.

No. 9068.—*Improvement in Railroad Car Trucks.*

Having described the nature of my improved safety truck for railroads, what I claim, and desire to secure by letters patent, is the construction of a truck with independent wheel frames, A, A, A, strengthened by braces, D, D, and connected to the opposite side wheel frame by the bar, E, extending across the truck upon which said wheel frames may vibrate, substantially in the manner and for the purposes set forth and shown.

CALEB R. DISBROW.

No. 9069.—*Improvement in Potato Diggers and Stone Gatherers.*

Having now set forth the nature of my invention, I will proceed to state what I claim, and desire to secure by letters patent. What I claim, therefore, is the use of the roller, having a series of rows of pins in its periphery, and secured on an axletree of a cart or other moving apparatus, in combination with an adjustable apron having teeth in it, and a discharging plate having teeth in it, substantially for the purpose of gathering stone, potatoes, fruit, or other substances or articles, and depositing them in a box, as herein-before set forth.

J. T. FOSTER.

No. 9070.—*Improved Lock.*

Having now described my invention, I will proceed to state what I claim and desire to secure by letters patent of the United States. What I claim, is the arrangement of the lever, *g*², and its accessories, for latching and unlatching bolt, relative to the lever, W, for locking the revolving key plate, whereby the auxiliary key acts upon the former by being lifted endwise, and upon the latter by its bit when revolving in the usual manner, substantially as set forth.

F. GARACHON.

No. 9071.—*Improvement in Cast Iron Car Wheels.*

Having now fully described my improvement in the railroad cast-iron car wheel, and shown the difference thereof from other wheels in use, what I claim as new, and desire to secure by letters patent, is so com-

bining the outer concentric disk, C, with the arched inner disk, E, that the union of the latter with the rim, D, shall form alternate curved radial arches, F, to the corrugated disk, C, at its connexion with the rim; and also that the union of the two disks, C, E, shall form intermediate solids, G, curving centre-ward from the rim for about two inches, (more or less,) in the manner and for the purposes specified.

ALFRED HEBBARD.

No. 9072.—*Improvement in Hanging Steps of Mill Spindles.*

Having thus fully described my tramblock and bridgetree, what I claim as my invention, and desire to secure by letters patent, is the manner of connecting the tramblock foundation with the stone-bearers by means of stanchions and screwbolts, as specified, in combination with the method of suspending the lighter lever from the shell which guides and sustains the pot containing the step of the spindle, by means of the shell, *j*, the sway bar, *p*, and the knife edges of the sway bar and pot, or their equivalents, in manner and for the purposes substantially as described.

GIDEON HOTCHKISS.

No. 9073.—*Improvement in Bedstead Fastenings.*

Having described the nature and use of my improvement, I do not claim a bedstead fastening composed of a stub bolt drawn tight on an inclined plane, as that is well known. But what I do claim, and desire to secure by letters patent, is the combination of the fastening, composed of the stub bolt, C, and the inclined plane, *h*, or their equivalents, drawn tight by the cording of the bedstead, with the endless screw, *f*, acting upon the inclined plane, *h*, by means of cogs, *d*, or other equivalent device, in order, by turning the inclined plane under the bolt, *c*, to loosen, separate, or tighten again the fastening without the necessity of slacking the cording.

JASPER JOHNSON.

No. 9074.—*Improvement in Moulding Hollow-Ware, &c.*

What I claim as new, and desire to secure by letters patent, is the method of moulding hollow-ware, or other similar castings, with a flaring rim, or its equivalent, (such as the lip on cannon stove or other tubular castings,) by using third patterns attached to suitable match-plates or follow boards, and so devised that, in connexion with the first and second patterns which form the exterior, I mould therefrom the top edge, a portion of the interior of the desired casting, and a true seat for the core; thus, with the core, forming the entire mould, substantially as described and represented.

JAMES J. JOHNSTON.

No. 9075.—*Improved method of Heating Sheet Iron while in the process of manufacture.*

Having thus described my improvement in the manufacture of sheet iron, by which it is made to resemble the imported Russia sheet iron, and

possess that beautiful mottled gloss and smooth hard surface, what I claim as new, and of my invention, and desire to secure by letters patent, is heating the sheets of iron in a bath of hot lead, instead of heating them in an oven, by which the surfaces of the sheets are protected from the oxygen in the atmosphere during the heating process preparatory to the rolling operation.

HENRY McCARTY.

No. 9076.—*Improvement in Compound Anchor.*

What I claim as my invention, and desire to secure by letters patent, is the above described anchor for holding ships.

SAM'L NYE MILLER.

No. 9077.—*Improvement in Mixing Mortar.*

What I claim as my invention, and desire to secure by letters patent, is the mixing of the lime and sand together before straining, substantially in the manner and for the purpose herein set forth.

JESSE PECK.

No. 9078.—*Improvement in Locomotive Engines.*

What we claim as our invention, and desire to secure by letters patent, is the combination in a locomotive engine of three cylinders, whose cranks are at angles of about 120° to each other, with valves, valve-chests, escape pipes, and steam pipes, provided with throttle valves, substantially such as are herein described, whereby the steam acts only on one side of the piston when the locomotive is advancing, and upon the other when it is backing, and the reversal is accomplished by such change in the operation of the steam without recourse to any of the ordinary means of reversal.

H. R. REMSEN.

P. M. HUTTON.

No. 9079.—*Improvement in Skates.*

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is making the runner, C, out of a plate of steel, G, and of the form substantially as shown and specified; the plate, G, being turned or struck the desired form by means of disks, or in any other desirable way.

NATHANIEL C. SANFORD.

No. 9080.—*Improvement in Belt Clasp.*

What I claim as my invention, and desire to secure by letters patent, is the making clasps to fasten belts or bands together, to run on machinery or around pulleys, by using jaws or plates of metal, constructing or adapting them to that purpose, and then confining them together with

screws, so as to hold the belts solid, and thereby introducing a new and useful manner of fastening machine belts together.

ALBERT M. SMITH.

No. 9081.—*Improvement in method of Ringing Bells.*

I am aware that bells have been rung in various ways before my invention, and that the devices which I use have been separately employed for various purposes. But what I do claim as my invention, and desire to secure by letters patent, is the combination and arrangement of the levers, C, C, and D, D, and the compound levers, E, E, so connected and attached to the axle, I, as to give motion to the bell-clapper, in the manner and for the purposes herein shown and set forth.

THOMAS V. STRAN.

No. 9082.—*Improvement in Brick Machines.*

I do not claim the plunger or follower, operated by a connecting rod and crank, as that is well known. But what I claim as new, and desire to secure by letters patent, is—

First. The employment or use of the lever, H, having step projections, (b^1), (b^2), on one of its sides, attached to the connecting rod, c, and arranged as shown and described, by which a greater or less pressure of the plunger or follower upon the clay in the moulds is obtained as desired.

Second. I claim the arrangement of the levers, I, J, N, rods, K, L, vertical lever, M, and the rod, O, with the levers, P, S, and upright shaft, R, for the purpose of operating the feeder, T, and vibrating bar, U, substantially as set forth.

Third. I claim the employment or use of the spring, Y, attached to the vertical lever, M, and operated upon by the rods, r, r, attached to the lever, whereby the working of the machine is prevented by any obstruction, as described.

Fourth. I claim the attaching together of the feeder, T, and vibrating bar, U, the vibrating-bar having a guide rod, (m,) working in suitable bearings, (n,) or arranged in any other suitable way.

R. A. VER VALEN.

No. 9083.—*Improvement in Sofa Bedsteads.*

What I claim as my invention, and desire to secure by letters patent, is the manner of guiding the seat, when it is raised and lowered, and of connecting the seat and bed when extended, by means of the metallic bearings, D, and the grooves, E, which they traverse when the seat is raised and lowered.

ALFRED WALKER.

No. 9084.—*Improvement in Railroad Cars.*

What I claim as my invention, and wish to secure by letters patent, is an enclosed passage or communication from one car to the other, as herein described, for the purpose of ventilating the train, through the

ends of the cars, from the forward part of the train, and for the safety of passengers while passing from one car to the other, and for the purpose of keeping dust out of the cars when the train is in motion.

CHARLES WATERBURY.

No. 9085.—*Improvement in connecting Cocks with Pipes.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the manner herein described of making a tight joint, viz: by boring the hole in the pipe as nearly cylindrical as may be, and making that part of the cock which is to be inserted, near the end and near the shoulder, of equal diameter with the holes, and the central part slightly larger, and then driving the cock into its place, the edges of the hole shaving the cock to its proper size and form.

DANIEL A. WEBSTER.

No. 9086.—*Improvement in Sugar Boiling Apparatus.*

What I claim as my own invention and discovery, and desire to secure by letters patent, is the construction of the transverse canal, A, in combination with the hinged cover, B, for the double purpose of returning the froth to the receiving pans and for preventing the sirup from falling into the canal while being laded from one pan to the other.

I also claim the construction of the lower longitudinal canal, G, with its hinged board, H, for the purpose of more effectually removing the feculencies as described.

I also claim the use of the movable plank, P, in the coolers, which when removed leaves a vacancy or channel for the molasses to flow away to the discharge aperture through the bottom of the cooler.

JUAN RAMOS.

No. 9087.—*Improvement in processes for the manufacture of Sugar.*

What I claim as my own invention and discovery, and desire to secure by letters patent, is the use of the juice of the plantain stalk and quick lime, combined substantially in the manner and for the purpose described, for defecating the cane-juice.

I also claim the application of a fresh strike of concentrated sirup from the battery to the molasses first drained off, for the purpose of crystallizing the sugar yet remaining in the molasses.

JUAN RAMOS.

No. 9088.—*Improvement in Revolving Boot-Heels.*

What I claim as of my invention is as follows: that is to say, I claim the combination of the four separate pieces, *a*, *b*, *c*, *d*—that is to say, the metallic ring, *a*, the leather or flexible disk, *b*, the leather annulus or ring, *c*, and the leather disk, *d*, the said combination being represented in figure 1, and constructed, arranged, and made to operate together, substantially as herein-before described.

THOS. WALKER.

No. 9089.—*Improved Centre Square for finding the Centre of a Circle.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The application to an instrument, substantially in the manner herein set forth, of a geometrical fact, viz: that any circle, touching the sides of a right angle, will be divided into two equal parts by the line which divides the right-angle into two equal parts.

Second. The union of the above with the common "trying square," by means of the bar, B, C, as described.

NATHAN AMES

No. 9090.—*Improvement in the construction of Bridges.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the string pieces with the posts, F, F, the cross-joists, E, E, the saddles, A, A, the diagonal braces, b, b, and the ties, a, a, of a bridge frame, in such manner that the said string pieces are enabled to move longitudinally under the influence of variations of temperature, or other cause, without injury to themselves or to the parts with which they are combined, substantially as herein set forth.

ABEL BRADWAY.

ELIJAH VALENTINE.

No. 9091.—*Improvement in Car Seats.*

What I claim as my invention, and desire to secure by letters patent, is a car-seat, constructed with a double back, which can be folded up or unfolded by means of the hinged arms, k, k, l, l, operating as above set forth, the two pieces which constitute the back being held together, when open or raised up, by the spring lips, o, o, substantially as above described.

JOHN BRIGGS.

No. 9092.—*Improvement in Turning Engines.*

What I claim, and desire to secure by letters patent, is the clasp, b, in combination with the slide, C, and saddle, B, for the purpose of arresting the combined operation of the slide, C, and pattern, I, when required.

And I also claim the cylindrical nut, E, in combination with the standard and tool holder, F¹, of the slide rest, as described, by which the edge of the tool is brought to the proper position to co-operate with the pattern bar and slide-rest, substantially as is herein set forth.

JAMES S. BROWN.

No. 9093.—*Improvement in the construction of Bridges.*

I am aware that diagonal or inclined counter-braces, differently arranged, have before been used: such, therefore, irrespective of their disposition and combination as specified, I do not claim. But what I do claim as my invention, and desire to secure by letters patent, is the upper

and lower counter braces, F, G, inclining in reverse directions to one another for either half of the span, as shown and described, and connecting the double diagonal main brace, E, with the upper and lower cords, A, B, united by tie timbers, D, as specified, producing the important results herein set forth.

J. B. GRIDLEY.

No. 9094.—*Improvement in Hand Planes.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The loop, *f*, on the cap, F, in combination with the plane iron, E, and the stem, B, of the stock, in the manner substantially as described, to wit: the said loop fitting over or embracing the plane-iron and stem, and allowing the iron to be secured between the cap and the stem by means of a wedge, G, placed either between the back of the iron and front of the stem, between the front of the iron and the cap, or between the back side of the stem and the back part of the loop, the three positions of the wedge forming three different widths of throat as herein explained.

Second. Providing the cap, F, with shoulders, *g, g*, which, when the cap is placed in the stock of the plane, will fall on suitable resting pieces, provided in or upon the stock, substantially as described.

BIRDSILL HOLLY.

No. 9095.—*Improvement in Patterns for Metal Hubs, &c.*

Having described my improvement, what I claim as my invention, and desire to secure by letters patent, is furnishing the usual pattern with a shield, as herein described, whereby I am enabled more easily to draw the core, and prevent chipping and breaking down thereof.

JASPER JOHNSON.

No. 9096.—*Improvement in Portable Grain Mills.*

What I claim as my invention, and desire to secure by letters patent, is forming the inner stationary cone with a cavity, (square or otherwise,) as described, for the purpose of readily securing the mill on the top of a post, or stump, without the use of bolts or wedges, &c., as set forth.

CHARLES LEAVITT.

No. 9097.—*Improvement in Churns.*

Having thus fully described the nature of my improvement in churns what I claim therein as new, and desire to secure by letters patent, is the racks, (*b*,) grooves, (*c*,) and pinions, (*d*,) by which the shaft (*e*) and beaters (*f*) are caused to traverse the milk or cream with a compound vertical revolving and reciprocating motion, after the manner and for the purposes described.

NORMAN B. LIVINGSTON.

No. 9098.—*Improvement in Railroad Car Brakes.*

I do not claim the mere combination of two plates or surfaces, one of which shall be made to rub against the other, and constitute a friction brake; but what I do claim as my invention, is my improved brake, composed of three or any greater number of plates or disks, arranged side by side, and on a shaft, and having some one or more of them connected with the shaft, so as to be revolved by it, and the others held stationary, so as not to be revolved, and the whole, except one of the outer ones, made to slide endwise on the shaft, and combined with an apparatus or means of pressing them towards and against one another, substantially as specified.

I also claim the combination of the cross-rods, D, D, with their friction plates and axle, for the purpose of sustaining the axle in case of fracture of it, as specified.

W. MONTGOMERY.

No. 9099.—*Improvement in Processes for Defecating Sugar.*

Having thus described the nature of our improvements, and the manner of performing the same, we would have it understood that we do not confine ourselves to the details as herein given, nor to the phosphates mentioned, as others may be substituted. What we claim is the use of aluminate of lime, in combination with the super-phosphate of alumina, or of lime, or with the phosphoric acid, for clarifying cane juice or sirups, as set forth. But we disclaim the use of phosphoric acid, except in combination with the above-named basis.

JOHN OXLAND,
ROBERT OXLAND.No. 9100.—*Improvements in Cutter Heads for Planing.*

What we claim as our invention, and desire to secure by letters patent, is our improved elliptical reducing and planing instrument, composed of obliquely acting cutters, secured to an elliptical plate in such a manner that the periphery of the said plate will gauge the depth of the action of the cutters, and also serve to hold down the material operated upon, substantially as herein set forth.

JAS. M. PATTON.
WM. F. FERGUS.No. 9101.—*Improvement in Cordage Machines.*

Having thus described the construction and operation of my machine, what I claim, and desire to secure by letters patent, is the use of grooved scrolls, (G, G, G,) and their combination with pinions, (e, e,) and grooved rollers, (d, d,) and friction rollers (h, h,) or equivalents for such friction rollers, to create a regular feed motion and equality of strain whilst laying or forming in a rope, twine, or cordage machine; the whole being constructed in the manner and for the purpose substantially the same as described.

JOHN W. PEER.

No. 9102.—*Improvement in Double Acting Doors.*

What I claim as my invention, and desire to secure by letters patent, is the manner, substantially as herein described, of arranging vertical and horizontal adjustable slats, C, C, C¹, C¹, and J, J, along the front, top, and back edges, a, b, c, of the door, B, for the purpose of allowing the door being opened in either direction, in or out; said slats being made to operate in the manner herein specified by means of the door, B, levers, D, D, or their equivalents, I, h, j¹, and springs, G, G, G¹, G¹, and j; the whole being constructed and arranged in the manner herein set forth.

WILLIAM RIPPON.

No. 9103.—*Improved mode of Grinding Puppet Valves whilst the Engine is in motion.*

What I claim as my invention, and desire to secure by letters patent, is the valve provided with spindles, free to turn on their lifters, in combination with mechanical devices, substantially such as are herein described, which rotate said valves when down on their seats, but do not act on said valves when rising or falling; the whole acting substantially in the manner and for the purposes described.

ENOS ROGERS.

No. 9104.—*Improvement in Machines for Rubbing Stone.*

We are aware that stationary or fixed wheels have been placed in the centre of stone rubbing machines, with cranked pinions revolving on their own axis, and around the said fixed wheels, as a common centre; therefore we do not wish or intend to claim the arrangement of stationary or fixed wheels, around which pinions revolve, to give motion to the arms and rubbers. But what we do claim as our invention, and desire to secure by letters patent, is the arrangement of a revolving centre driving wheel, with a series of stationary crank shaft pinions, revolving on their own axes, whether in combination with the cranks, f, or stationary pins, so constructed and arranged upon a radial line as to give the arms and rubbers a rotary or compound elliptic rotary motion, for the purposes herein shown and set forth.

PLEASANT E. ROYSE.
IRA REYNOLDS.No. 9105.—*Improved Combination of Cutters for Threading Wood Screws, &c.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as herein specified, of cutting away the mass of the metal to form the thread, by means of a burr-cutter, in combination with the method, substantially as specified, of finishing and smoothing the threads by means of the chaser, as set forth.

THOS. J. SLOAN.

No. 9106.—*Improvement in the Thermostat for Regulating Heat.*

What I claim as my invention, and desire to secure by letters patent, is the application of the physical principle of the expansion and contrac-

tion of substances by varying degrees of heat, to regulate and control a mechanism applied to operate a damper, register, valve, ventilator, or other equivalent device, which mechanism is actuated or propelled by some independent motor, substantially in the manner and for the purpose specified.

THOS. J. SLOAN.

No. 9107.—*Improvement in Pneumatic Spring.*

Having thus described my improvements, I shall state my claim as follows: What I claim as my invention, and desire to have secured to me by letters patent, in an air car spring, in which the piston operates upon the disk of rubber, or other elastic substance, which forms one side of the air chamber, is the combination of the movable diaphragm, constructed of the pieces, *f*, *f*, &c., operating substantially as herein above described, with the rings, *h*, placed loosely on the same, for the purpose herein above set forth.

ELIJAH WARE.

No. 9108.—*Improvement in Planing Machines.*

Having thus described my improvements, what I specifically claim therein as new, and desire to secure by letters patent, is a reducing plane, composed of a series of oblique irons, arranged substantially as herein set forth.

I also claim the combination of the before-claimed reducing cutters with smoothing cutters, arranged substantially as herein set forth.

WM. WATSON.

No. 9109.—*Improvement in Railroad Car Brakes.*

What is claimed by us is to so combine the brakes of the two trucks with the operative windlasses, or their equivalents, at both ends of the car, by means of the vibrating lever, *A*¹, or its equivalent or mechanism, essentially as specified, as to enable the brakeman, by operating either of the windlasses, to simultaneously apply the brakes of both trucks, or bring or force them against their respective wheels, and whether he be at the forward or rear end of the car.

A. G. BACHELDER.

LAFAYETTE F. THOMPSON.

No. 9110.—*Improved Screw Threading Machine.*

What I claim as my invention, and desire to secure by letters patent, is a fusee threading cutter for threading screw blanks, substantially as herein set forth.

I also claim the arrangement of the cutter and blank in such manner that the adjacent portions of their peripheries shall move in opposite directions during the operation of threading, so that the metal may be cut from the grooves in the blank from the bottom outwards to allow the chip to be freely discharged, substantially as herein set forth.

I also claim the combination of the vibrating feeding trough and screw-driver, arranged in such manner that when the driver is pushed forward to turn a blank while being threaded, an unthreaded blank may lie in the trough upon the driver, ready to drop into place before it the instant it is drawn back to allow the previous blank to be withdrawn from the cutter.

I also claim the combination of the vibrating arm, or its equivalent, to detach the head of a threaded blank from the bit of the screw-driver, with a discharging punch, or its equivalent, to eject the threaded blank from the rest; the two thus operating insuring the discharge of one blank before another is presented.

Lastly, I claim a spring, or the equivalent thereof, in the mandrel of the screw-driver, substantially as herein set forth, to impart to the bit of the screw-driver a slight yielding pressure against the head of the blank until it finds and enters the neck thereof, in combination with the lever and cam, which afterwards apply to the driver a positive motion to keep it engaged with the blank while the latter is turned to be threaded, substantially as described.

CULLEN WHIPPLE.

No. 9111.—*Improvements in Machines for Tonguing Boards.*

Having thus fully described my invention in tonguing, what I claim therein as new, and desire to secure by letters patent, is, in combination with flaring stock, substantially as described, the arranging of a series of cutters therein, so formed as to take the shavings from the sides and shoulders of the rebate, substantially as described; and this I claim whether said cutters have a double or single graduation, so that I attain the result herein set forth, by substantially the arrangement and combination herein described.

SAMUEL ALBRO.

No. 9112.—*Improved Instrument for driving Nails in different places.*

What I claim as my invention is the instrument as constructed of a combination of a tube, A, two or more springs, B, B, one or more holding points, C, C, and ramrod, D, and made to operate substantially as herein-before specified.

SETH P. CARPENTER.

No. 9113.—*Improvements in Cast-iron Caissons.*

Having thus described my invention, what I claim as new, and desire to secure by letters patent, is the method of bracing rectangular or other shaped metallic boxes by means of the diagonal braces, B, and rods, E; the braces and rods being arranged in the manner substantially as set forth.

JAS. P. DUFFEY.

No. 9114.—*Improvement in Threshing Machines.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the manner

herein described of constructing skeleton threshing cylinders, viz: by bolting or welding to the arms, *a*, which are attached to the shaft, *d*, any suitable number of branches, *b*, which, together with the arms, present their edges to the line of motion, and are provided with serrated ends, substantially in the manner and for the purpose set forth.

JOSEPH G. GILBERT.

No. 9115.—*Improvement in Shingle Machines.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is so combining and arranging the riving knife and the shaving knives in their ways, that after the shingle has been separated, or nearly so, from the bolt, it will be carried forward by the carriage to the shaving knives, where it is finished, and so that the riving knife shall remain stationary until the shaving knives have taken firm hold of the rived shingle; the whole being operated by the means substantially as herein described.

I also claim, in combination, the double carriage—one moving on top or over the other, and so arranged that one shall feed up the riven shingle to the knives, and the other shall carry back the bolt, at each operation of the machine, sufficiently far to cut off one shingle therefrom; the whole being operated substantially in the manner described.

FURMAN HAND, JR.

No. 9116.—*Improvement in Railroad Car Brakes.*

What I claim as new, and desire to secure by letters patent, is the method of raising the forked or cam hook-end of the jointed bar, *B*, to a horizontal position immediately in advance of the pin, *C*, at the upper end of the rubber levers, *D*, so that it will act upon the same when forced back, and enable it to detach itself and descend to an inclined position when it is desired to back the train by means of the friction wheels, *I*, whose shaft, *G*, moves in slots, and whose peripheries rest on the car-wheel shaft or axle, and chain, *E*, attached to the shaft of the friction wheels, and passing over the roller, *F*, above the jointed bar to which it is attached, arranged and operated as herein described, whether said jointed bar, *B*, be attached to the sliding bar represented or to the ordinary bumper of the car.

JOS. P. MARTIN.

No. 9117.—*Improvement in Churns.*

I am aware that the oscillating churns have been used before; therefore, this I do not claim; but what I do claim as my improvement, and desire to secure by letters patent, is mounting the churn tub or barrel composed of two sections, *I*, *I*, and containing a grate, *J*, at their juncture, within a clasp band, united to pivoted pendant bars, *C*, *C*, whereby (through means of a lever) the barrel is so operated as to present its ends uppermost, the one after the other, by which the milk or cream is carried up by one section and allowed to descend through the grate, as described.

JOHN McLAUGHLIN.

No. 9118.—*Improvement in Shingle Machines.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is making the double racks in segments—one of which is stationary, and the other adjustable, for the purpose of cutting shingles of various thicknesses at butt and point with the same racks, substantially as described.

ROBERT L. NOBLET.

No. 9119.—*Improvement in Benzole Lights.*

I do not lay claim to any particular apparatus; but what I do claim as my invention or discovery is the mixture of alcohol, benzole, and such proportions of water as shall render the mixture milky in appearance, and passing air through the same, substantially as herein set forth. I do not confine myself to the exact proportion of water named in the specification, but design to cover the results herein named.

HENRY M. PAINE.

No. 9120.—*Improvement in Corn Shellers.*

Having thus fully described my improved corn sheller, what I claim therein as new, and desire to secure by letters patent, is the within described combination of a toothed or flanged cylinder with an enclosing cylindrical casing of such proportions respectively, and so arranged the one within the other, as to leave an amount of space between the two, which will cause the cobs and ears to clog and accumulate therein during their passage through the same, and form an elastic self adjusting bed for the spirally arranged teeth or flanches of the shelling cylinder to act in concert with, in place of the stationary bar or rest which is employed in all other cylindrical corn shellers.

WILLIAM READING.

No. 9121.—*Improvement in Cast-iron Car Wheels.*

Having thus described my improved car-wheel, what I claim as new therein, and desire to secure by letters patent, is the double curved arms interlacing one another, and uniting the opposite edges of the rim and hub, substantially as specified.

HIRAM H. SCOVILLE.

No. 9122.—*Improvement in Bedstead Fastenings.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is forming the tenon portion of a bedstead joint by catch studs or pens, (*f*,) having heads, (*g*,) projecting rectangulary from tangs, (*h*,) so tapered and notched that, by being slipped forcibly past each other, they can be made to interlock within a socket drilled for them, across the radial or bastard grain of the rail tenon, and be made by their thus interlocking to resist any tendency to be drawn out from the rail, and by the compressure of their heads to prevent the rending apart of the fibre of the tenon, and

can be made of such dimensions that a pin of adequate strength can be inserted within the limits of an ordinary bedstead tenon.

J. A. SARGEANT.

No. 9123.—*Improvement in Alarm Clocks.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the double notched cam, I, with the locking apparatus, K and L, with their appendages, *f, m, r, n, i, j,* and *q*, when used in any kind of time pieces, for giving alarms at the time desired, and giving *more than one* alarm with *once winding*; when the whole is constructed, arranged, and combined substantially as herein described.

JONATHAN S. TURNER.

No. 9124.—*Improvement in Cotton Presses.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is the arrangement and combination of the screws, J, J¹, and E, with the top and bottom cross-beams of the frame and the cross head of the follower, by which the follower and the bed-plate are made to press the bale from top and bottom, and the distance travelled by the follower towards the bed-plate is three times that of the frame (to which the power is applied) over the screw.

Secondly. I claim making the weight of the press an auxiliary power, by resting it entirely on the lower screw, E, so that in pressing the bale the frame is travelling down the screw as on an inclined plane.

J. G. WINGER.

No. 9125.—*Improvement in Seed Planters.*

Having thus fully described my improved seeding apparatus, and the various modes I contemplate modifying it, as required by law, what I claim therein as new, and for which I desire to secure letters patent, is the hooked rod, (*n*¹), constructed and arranged substantially in the manner and for the purpose set forth.

JOSHUA WOODWARD.

No. 9126.—*Improvement in Door Locks.*

I therefore claim the combination of the cover plate and its arbor with the slide for carrying the bit plate, and a contrivance applied to the said arbor, and made to actuate the said slide and bit plate, all constructed and made to operate together substantially as herein before described.

And I also claim the improvement termed the circular arc lip in its combination with the cover plate and the tumblers, and the key, which does not revolve with the cover plate, and made to project down between the bit plate recess and the tumblers, when the bit plate hole, or entrance of the cover plate, uncovers the bitt plate recess either in whole or in part, all substantially as herein before explained.

MARCUS R. STEPHENSON.

No. 9127.—*Improvement in Fire Engines.*

What I claim as my invention, and desire to secure by letters patent, is the mode herein described of drawing the resistance towards the fulcrum of the lever, to which the power is applied through its entire descent; thereby lengthening the long arm and shortening the short arm of the lever, substantially as described.

ORVILLE G. ADKINS.

No. 9128.—*Improvement in Car Seats.*

Having thus described my improvements, I shall state my claim as follows: what I claim as my invention, and desire to secure by letters patent, is a car seat, to the bottom of which are jointed a back and leg support, the said back and leg support being placed and held at any desired angle by arms, *i, i*, fastened to the side arms, *m, m*, in any desirable way, as above set forth.

WM. L. BASS.

No. 9129.—*Improvement in Ploughs.*

What I claim as my invention, and desire to secure by letters patent is the arrangement of the beam of a plough with respect to the irons, and the bending of the standard towards the land, and having its line of direction parallel with that of the land side, in the manner and for the purposes herein set forth.

N. BLATCHLEY.

No. 9130.—*Improvements in Machines for shaving Shingles.*

Having thus fully described my improved machine for dressing riven shingles, what I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the yielding knives, *e, e*, the sliding shingle patterns, *c, c*, the roller, *b*, the elastic bed, *F*, the plate, *c*, and the box, *E*, substantially in the manner and for the purpose as herein set forth.

ABEL BRADWAY.

No. 9131.—*Improvement in method of converting Reciprocating Rotary into Reciprocating Rectilinear Motion.*

I do not claim the use of pulleys, chains, and guides, for the purpose of converting rotary reciprocating into rectilinear reciprocating motion; but what I do claim as my invention, and desire to secure by letters patent, is slotting or forking the rods, *c, c*, and letting their two sides, *a, a*, into grooves, *b, b*, in the periphery of the pulley, and connecting the rods and pulley by three (3) chains, two (2), *D, D*, of which connect with each rod on opposite sides, and pass in one direction round the pulley, and the other, *D¹*, connects with each rod within the slot or fork, and passes in the opposite direction round the pulley, for the purpose of guiding and directing the rods, and dispensing with the ways and cross

heads ordinarily made use of for this purpose; the several parts operating substantially as and for the purpose set forth.

ALFRED CARSON.

No. 9132.—*Improvement in Machines for dressing Stone.*

What I claim as new, and desire to secure by letters patent, in the within-described machine for dressing stone, and for facing, reeding, fluting, and cutting mouldings upon stone, is the operating of one or more chisels or tools by a crank or cranks, or their equivalents, which, by their continued action upon said tools, thrust or force them against the stone or other material to be worked, substantially as described.

ROBERT EASTMAN.

No. 9133.—*Improvement in Cruppers for Harness.*

What I claim as my invention, and desire to secure by letters patent, is the construction of a crupper as herein described, by means of which, in taming or subduing horses, the tail of the horse may be kept in a desired position without the necessity of resorting to the painful and injurious operation of nicking, or pricking, and the pulleys, and to be used for the same purpose when riding or driving the horse.

JOHN J. FLACK.

No. 9134.—*Improvement in Grain and Grass Harvesters.*

I claim as my invention, and desire to secure by letters patent—

First. An open spaced guard finger, with an inside surface or middle finger, for the cutting tooth to cut against, substantially as herein described.

Second. I claim the construction of a clamp, of two parts, which will hold the finger bar where desired, without bolts passing through the finger-bar, arranged as herein set forth.

Third. I claim the construction of a mould-board, with two upright posts, which posts pass through proper apertures in the frame of the machine, and are free to move up or down, according to the varying surface of the ground, and sustain the mould board forward of the cutter-bar on an angle sufficient to move the mown grass which may be forward of the finger bar to the inside of the clamp, substantially as herein described.

Fourth. I claim the arrangement and combination of a right-angled stanchion, made of wood or metal, with a pivotal motion on the framework of the machine, and supporting upon its upright part a crooked lever, made of wood or metal, with a pivotal motion on the said stanchion, to which lever is attached a rake. By the combination and operation of these two pivotal motions of the stanchion and lever as set forth, a direct line motion may be given to the rake where needed, as also a circular motion, so that a person may remove the grain from the platform in bundles, and sit or stand on the machine near the driving-wheel, as herein described.

ELIAKIM B. FORBUSH.

No. 9135.—*Improvement in Railroad Car Brakes.*

What I claim as of my invention is the combination of the sliding detached lever, R, with the main lever, O, and the connecting rods, P, Q, so as to operate essentially in manner and for the purpose as herein-before specified.

WILLIAM HALL.

No. 9136.—*Improvement in Rice Hullers.*

I do not claim the use of India-rubber surfaces for hulling the rice, such having been used before. But what I do claim as my invention, and desire to secure by letters patent, is the use of a vulcanized gum-elastic or rubber, or its equivalent, in combination with a stone or other equivalent non-elastic rubbing surface, for hulling rice, substantially in the manner herein set forth.

I also claim the manner of constructing the rubber, C, of three substances of different qualities, viz: the metallic disk, *d*, leather disk, *e*, and gum-elastic or gutta percha disk, *f*, by which firmness, elasticity, and durability are combined, substantially as herein described.

CLARK JACOBS.

No. 9137.—*Improvement in Grass Harvesters.*

What we claim as our invention, and desire to secure by letters patent, is—

First. The clearer, as above described.

And, lastly, we claim the coupling the wheel (E) to the shaft (I) with universal joint, constructed with toggle joint arms, (L, L,) to admit of a vertical motion, and with gimble-ring to allow of a rolling or wobbling movement, without affecting its rotary motion, when combined and arranged for the purpose and in manner above described.

JESSE S. LAKE.

DAVID LAKE.

No. 9138.—*Improvement in Grass Harvesters.*

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is suspending the cutting head and front part of the machine, whereby I dispense with front wheels by constructing the frame as described, and attaching the cutting head to the hames of the harness, in the manner and for the purpose herein fully set forth.

WILLIAM MANNING.

No. 9139.—*Improvement in Sewing Machines.*

Having fully described my invention, what I claim as new, and desire to secure by letters patent, is—

First. The stopping or prevention of the operation of the feed, substantially as herein described, when the thread breaks, or is otherwise prevented from forming a loop, by attaching the stud, *q*, or its equivalent,

through which the feed-lever, U, is operated upon by the feeding cam to a lever, V, the said lever, V, being subject to be operated upon in such a manner as to withdraw the said stud, or equivalent, from the operation of the cam by a sliding piece, W, attached to the picker, *f*, which drives the shuttle forward for filling the said sliding piece, requiring to be caught and moved by every loop to prevent its operation on the said lever, V.

Second. Sewing or making the back stitch by folding or bending the cloth or material over the edge of a guide-plate, 6, or any other suitable edge, and passing each loop through the cloth or material on each side of the said bend, and each succeeding loop through in advance of the preceding one, and half way between the two preceding perforations, substantially as herein set forth.

CHARLES MILLER.

No. 9140.—*Improvement in Grain Separators.*

Having thus described my improvements in grain separators and cleaners, what I claim therein as new, and desire to secure by letters patent, is the combination of the adjustable crank for vibrating the separating trough with the adjustable tracks on which the jumping roller runs, which shakes the trough up and down, whereby the conveyance of the straw may be accelerated or retarded without affecting the vertical shaking of the straw.

I also claim the adjustable angular rails, constructed and arranged in the separating trough, in the manner and for the purposes herein set forth.

I likewise claim the method herein described of relieving the winnowing apparatus of a portion of the work by separating, by means of a screen, S, arranged substantially as herein set forth, such impurities as will pass through it before the grain is delivered to the winnowing apparatus.

CYRUS ROBERTS.

No. 9141.—*Improvement in Railroad Car Brakes.*

What we claim as our invention, and desire to secure by letters patent, is the arrangement, substantially as set forth, of the levers, K and Q, rods, R, and vertical shaft, I, applied to each truck of a railroad car, in combination with the method of connecting the levers, K, by means of the links, L, so that if one or more of the links or bars should break, so as to render part of the brakes useless, the remainder are still serviceable for the purposes intended.

EBENEZER ROSS.
JOHN HOUSTON.

No. 9142.—*Improvement in Machines for Rubbing Stone.*

I do not claim the separate employment of a rotary rubber, L, and blocking tables, M, M, as such are in common use; nor do I claim, of itself, giving the rubbers, G, G, a separate motion, in addition to their revolving one, by means of pinions, H, H, gearing into a fixed wheel, D, and through cranks and connecting rods, serving to operate the rubbers,

as such has before been done. But what I do claim as my invention, and desire to secure by letters patent, is the combination of parts herein specified for rubbing and polishing marble or other stone, consisting of rubbers, G, G, having, in addition to their revolving travel on the faces of the stones being rubbed or polished, a motion in and out from the centre shaft, E, not in a radial, but in a winding, twisting, or curvilinear direction, produced by the cranks, I, I, and rods, J, J, and F, F, as shown and set forth; the said rubbers, G, G, being held in clamps, C, C, so hung or connected that the rubbers, by their weight, will adjust themselves to the stone, without rendering it necessary to pack up the latter, and for the further advantages specified.

PLEASANT E. ROYSE.

No. 9143.—*Improvement in Water Pipes of Tuyeres.*

What I claim, and desire to secure by letters patent, is the combination of the pipe, H, with the circulating pipe, P, V, Q, so connected that H may be removed from or form a water-tight joint with P, V, Q, whereby I am enabled to blow all the water out of the latter, and at the same time to shut off its communication with the cistern, in the manner and for the purposes described.

PETER SWEENEY.

No. 9144.—*Improvement in Railroad Car Coupling.*

What I claim as my invention, and desire to secure by letters patent, is the transverse incline bar, F, in combination with the coupling pin, E, and link, D, the pin resting on the incline bar, and being raised clear of the link by passing up the inclines on the said bar as it (the pin) moves sideways, substantially as herein described.

JAMES TURNER.

No. 9145.—*Improvement in preparing Zinc from the Ores.*

Having thus fully described the nature of my invention or discovery, and shown the method in which it may be accomplished, what I claim therein as new, and desire to secure by letters patent, is the process of manufacturing metallic zinc, in a state of impalpable powder, by the cooling agency of steam, substantially in the manner herein set forth.

HENRY W. ADAMS.

No. 9146.—*Improvement in Machines for forming Button Backs.*

What I claim as my invention, and desire to secure by letters patent, is the jointed clamps, (*i*, *i*, fig. 2,) and the tongue, (*n*, figs. 1 and 3,) to form the eye, when combined with the slide, (*L*,) with its stationary and movable jaws, (*a* and *b*,) when the movable jaw and slide are worked by a jointed lever, (as *c*, *c*¹,) to feed the wire, when they are constructed and made to operate substantially as herein described.

I also claim the die for punching and forming the button back, composed of the punch, (*S*,) and bed, (*Q*,) when combined with the slide,

($p, p,$) and feeding cylinder, (P,) when constructed and operated substantially as herein described.

I also claim the jointed fingers, (u and $u,$) for receiving the formed and punched back, and conveying it to, and placing it on, the eye, when combined with the setting or riveting punch, (U,) when they are constructed, combined, and arranged and made to operate substantially as herein described.

JAMES C. COOKE.

No. 9147.—*Improvement in Saws for Sawing Stone.*

What I claim as my invention, and desire to secure by letters patent, in the making of blades for cutting stones, is the employment of lead, or its equivalent, between and in combination with the hard metal sides, substantially as specified.

ALBERT EAMES.

No. 9148.—*Improved Churn and Butter Worker.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The combination, in a cylindrical or tub churn, of floats, or paddles, attached to a revolving axis, with stationary posts standing near the axis of the churn, combined and operating in the manner and for the purpose above specified.

Second. The combination of dashers, or paddles, broad at their ends, with posts small at each end and large in their middle portions, combined and operating in the manner and for the purpose above specified.

ORSAMUS R. FYLER.

No. 9149.—*Improvement in Fastenings for Harness.*

Having thus fully described my invention or improvement, I wish it to be understood that I do not claim, in general terms, the use of a crooked lever and ring, for these have been applied before to this purpose; but I do claim as new, and desire to secure by letters patent, the use of this peculiar kind of crooked lever, or hook, described above, in which the fulcrum and centre of motion are at the short end, and the point of resistance at the curve and in a straight line with the fulcrum and other end, thereby effecting the desired object within itself, and without the combined aid of plate, spring, rivet, or other fixture, whether the same be applied to the fastening of hames, as described above, or to connecting the ends of chains, as in the case of the chains usually fastened across the middle of wagon bodies, or to any similar purpose.

THOMAS HENDERSON.

No. 9150.—*Improvement in Duplex Escapements.*

I do not claim any of the parts herein described or shown, nor do I claim the duplex escapement shown in fig. 5. But what I do claim as new, and of my own invention, and desire to secure by letters patent of the United States, is the construction and arrangement of the escapement

wheel, 3, with three points, 4, and pins, 5, to take the arm, 7, on the balance axis; the whole being constructed and operating substantially as described and shown.

CHAS. E. JACOT.

No. 9151.—*Improvement in Seed Planters.*

What I claim as my invention, and desire to secure by letters patent, is the combination of a series of stationary combs, secured to the bottom of the hopper near the orifices through which the grain is discharged, with a corresponding series of rotating teeth secured to a cylinder, or roller, that revolves within the hopper, in the manner and for the purposes herein set forth.

I also claim the combination of the cross bar, Y, and its links and levers, with the draught bars of the shares, whereby the whole series of shares can, at will, be raised and depressed while the machine is in motion, and the weight of the whole machine is brought to bear upon any tooth that may tend to run out in consequence of meeting with hard soil, while, at the same time, an even depth of furrow is maintained by the wheels, and the weight of the frame taken off the shares, except when some one of them tends to run out, as herein set forth. But I make no claim to any arrangement of mechanism for holding the teeth or shares in the ground when the pressing bar acts upon the teeth through the medium of springs.

ADAM KRABER.

No. 9152.—*Improvement in Soaps.*

What I therefore claim, and desire to secure by patent, is the combination of ammonia, or carbonate of ammonia, with kaolin, or other equivalent aluminous minerals, in the composition of a soap, substantially as herein set forth.

WM. McCORD.

No. 9153.—*Improvement in Railroad Track Clearer.*

I do not claim the grapples, C, C, which are attached to the engine car, or carriage, and embrace the top flange of the rail; but what I do claim, and desire to secure by letters patent, is keeping the said grapples, C, C, closed upon the flange of the rail by the collar, G, which drops over their joints, and opening the same by chains, or their equivalents, attached to the said collar and to the grapples, under the control of a person on the engine car, or carriage; said chains, or equivalents lifting the collar so as to leave the grapples free, and then opening them, substantially as herein set forth.

SIMEON MINKLER.

No. 9154.—*Improved Block for Stretching Coats.*

Having now described my invention, I will proceed to state what I claim, and desire to secure by letters patent:

What I claim is the use of the seamless coat stretcher, made in two halves, and jointed together by hinges at their back edges, and having permanent or adjustable arms attached thereto, and hooks for holding the edges of the cloth while stretching, spring hook or ketch and pin for holding the halves of the machine together, and steadying pins in the face of the two halves, in combination therewith, substantially as set forth.

SAMUEL M. PERKINS.

No. 9155.—*Improvement in Railroad Car Seats.*

What I claim as my invention is to so combine the back, D, with the two end frames, B, C, by means of bars, E, F, jointed to it, one or two studs, *a*, and one or two series of notches, *d, d*, or equivalents therefor, that the said back (when not a reversible one) may be raised and inclined in various positions, so as to not only support the back but the head of a person at the same time.

And I claim making the back reversible by means of two series of notches, *d, d*, and *e, e*, &c., and two sets of studs, *b*, or equivalents, the same being arranged on opposite sides of the chair, and made to operate as specified.

And in combination with the back, made to raise and be inclined by contrivances, substantially as specified, I claim the improvement of making each bar, E, F, with a rack or racks of teeth, or succession of notches, to be set on the pin, G or H, in manner and for the purpose as specified.

SAMUEL M. PERRY.

No. 9156.—*Improvement in Mortising Machines.*

What I claim as my invention, and desire to have secured to me by letters patent, is the method I employ of turning the mandrel (6) that contains the mortising chisel, by means of the collar, (*s*), on the mandrel springs, (14, 14,) ketches, (11, 11,) shifting piece, (12,) friction rings, (R, R,) and pinion, (13,) all in combination for the purpose heretofore mentioned and set forth in the foregoing specifications.

WILLIAM C. SHAW.

No. 9157.—*Improvement in Lamps.*

What I claim as my improvement is the open slide tube, E, as combined with the supply reservoir of a lamp, constructed and made to operate substantially as described, the object of such tube being not only to maintain the oil at a constant level around the wick, but to enable a person to regulate the height of such level at pleasure.

CHARLES SIEDHOF.

No. 9158.—*Improvement in Graduated Cutters for Cloth and other Substances.*

What I claim as my invention, and desire to secure by letters patent, is the employment of a cutter and bed, or their equivalents, made adjust-

able in relation to each other in the direction of the cutting edge, for the purpose of varying the length of the cut, substantially in the manner herein described.

HALSEY D. WALCOTT.

No. 9159.—*Improvement in Compounds for Uniting Steel and Iron.*

I wish it understood that I do not claim the use of crude borax, either pulverized or not, for the union of metals, as this has been used for the purpose by others; but it does not insure a perfect union, and cannot be relied upon with any degree of certainty, and great loss of time and material often occurs, as well as a ready separation of the two, even after a seeming union, and the particular work seems complete and ready for the use intended. But what I do claim as my invention or discovery, and desire to secure by letters patent, is the mode and manner of calcining and preparing the crude borax, and compounding the same afterwards with the carbonate of ammonia, and in the proportions above set forth and described, and the mode of applying or using it, or any other substantially the same and which will produce the intended effect.

B. C. LEAVITT.

No. 9160.—*Improvement in Brooms.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Securing the material of the broom by means of a clasp, having its jaws hinged at the extremities, E, and fastened together at the socket, B, or some equivalent device, substantially as herein set forth.

Second. A spring, or springs, whether placed, as herein described, inside of the brush or material composing the broom, or otherwise, so as to operate in substantially the same manner.

Third. The cross fastened to the spring with spurs, or otherwise, in combination with the hoop, to hold the brush or other material in its proper place, as described.

CYRUS T. MOORE.

No. 9161.—*Improvement in Railroad Car Seats.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is, in combination with a permanent seat or seats, a divided back, which is so constructed that one part thereof shall swing around one end of the seat and the other part around the other end thereof, the back retaining always its upright position; by which arrangement the two parts of the back may be entirely reversed, or they may be left *tête-à-tête*, substantially as herein described.

CHARLES P. BAILEY.

No. 9162.—*Improvement in Looms for Weaving Figured Fabrics.*

I do not claim the application of the above-named levers to the trap or not boards of the jacquard loom; but what I do claim therein as new, and desire to secure by letters patent, is—

First. The opening, or raising and depressing the harness, by means of levers or bars, oscillating about a fixed point or points, in connexion with hooks, or their equivalents, which catch upon these levers or bars, and which constitute a part of the connexions between the top and bottom jack-levers, cords, or other devices, for raising and drawing down the harness, thus raising or depressing the heddles in a greater or less degree, according as they are more or less distant from the *fell*, or cloth-making point; the motions of the harness all commencing and ending at the same time, as herein substantially described.

I also claim the method, as described, of arranging and combining the parts for moving the figuring chain, or cylinder, with the other parts of the machine, so as to carry the said chain, or cylinder, back as well as forward, as the machine is made to move backward and forward.

C. W. BLANCHARD.

No. 9163.—*Improvement in Pressure Gauges.*

Having now described my invention, I wish it to be understood that I claim the application of curved or twisted tubes, whose transverse section differs from a circular form, for the construction of instruments for measuring, indicating, and regulating the pressure and temperature of fluids, substantially as above described.

EUGENE BOURDON.

No. 9164.—*Improvement in Dumping Wagons.*

Having thus described my improved dumping wagon, what I claim therein as new, and desire to secure by letters patent, is the arrangement of the body on a fixed roller fulcrum, on the frame of the running gear, in such manner that by a slight amount of force the body can be turned to give its under side, which rests on the roller, either a forward or backward inclination, to cause the weight of its load to tend to hold it forward or back, as it is required to carry or to dump the same, substantially as herein set forth.

THOMAS CASTOR.

No. 9165.—*Improved Tally Board.*

What I claim as new, and desire to secure by letters patent, is the manner of tallying or keeping an account of articles as they are delivered or moved, by means of screw rods, B, having nuts, E, upon them, said nuts being placed over graduated spaces, F, which indicate the distance the nuts have moved, or give the number of turns or half turns of the rods; the rods, nuts, and spaces being arranged as shown and described, or in any other manner substantially the same.

FRANCIS N. CLARKE.

No. 9166.—*Improvement in Casting Stereotype Plates.*

What I claim as my invention, and desire to secure by letters patent, is the manner of casting stereotype plates by the application of pressure

upon the surface of the melted metal in the inner kettle, which pressure forces the metal, while fluid, through a tube and upon the mould—the face of the mould being turned down to receive the metal making the casting; the whole acting substantially in the manner and upon the principles set forth and described in the above specification.

HOBART P. COOK.

No. 9167.—*Improvement in Compositions for Preserving Butter.*

What I claim as my invention, and desire to secure by letters patent, is the preservation of fresh butter for any length of time, as herein described, using for that purpose the aforesaid chemical compound, or its equivalent, substantially in the manner and for the purpose set forth.

LS. DE CORN.

No. 9168.—*Improvement in Looms for Weaving Figured Fabrics.*

What we claim as constituting our inventions, and which we desire to secure by letters patent, is the following, viz:

First. The star movers, whether they be arranged to slide instead of the star wheel, or otherwise, and neutral surface, in combination with the star wheel, (sliding or otherwise,) arranged substantially in the manner and for the purpose herein specified.

Second. We claim the pins or pattern plates, or their equivalents, in combination with the diamond-shaped projection or four sided inclined plane, lever, and star wheel, arranged substantially as described, for the purposes herein specified.

Third. We claim the guide, N, in combination with star-movers and star-wheel, as described.

Fourth. We claim the combination formed by the mechanism herein described, for giving a positive and correct motion to the jacquard card cylinder—that is to say, the star mover, star-wheel, and connecting arms, H^s, with mitre wheels, or their equivalents, as herein fully made known; and the above mechanism is also intended to be applied to other description of looms, where lags and other similar devices are used, instead of the cards, as on barrel and other similar looms; therefore the claim is not limited to the turning of a jacquard card cylinder.

SAMUEL ECCLES.

JAMES ECCLES.

No. 9169.—*Improvement in adjusting the Chasers in Screw-Cutting Stocks.*

Having thus fully described my invention, I do not claim the index. But what I do claim is the adjustable band, “d,” figure 4, and d, d, figure 5, on which the index is lettered, for adjusting the index to the chasers, the same being adjustable to the wear of the chasers or chasers of different lengths, and in combination with suitable apparatus for causing said chasers to approach and recede from a common centre for the purposes stated.

And I also claim the shaft, “f,” as shown in figures 2 and 4, and pinion, “H,” figure 2, in combination with pinions, G, G, G, G, figure 2,

and the bevel gear wheel, E, figure 3, at the outer end of which shaft is attached a crank to drive the bevel gear-wheel, E, figure 3, as herein before set forth and described, and for the purposes stated.

M. C. GARDNER.

No. 9170.—*Improvement in Scales for Weighing.*

What we claim as our invention, and desire to secure by letters patent, is the making of the weighing beam of platform or other balances or scales with two graduated arms, extending in opposite directions from the fulcrum of said beam, and applying one or more movable weights or peas to each of them; the divisions on one arm indicating the larger divisions of weight, and those on the other any subdivisions or fractions of the larger that may be desired, substantially as herein set forth and described.

WM. P. GOOLMAN.

WILLIAM HOLTSECLAW, JR. .

No. 9171.—*Improvement in Jacquard Looms.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Connecting the knot and trap boards with, and operating them by, levers arranged substantially as herein described, so that the second row of heddles or harness shall fall and rise so much farther than the first, and the third than the second, and so on through the entire series of heddles or harness, that as the warp is sprung, the threads in the same shed from each row of heddles, whether front, middle, or back, and whether sprung in the top or bottom shed, all lie substantially in the same plane.

Second. The apparatus which inserts and draws the wires to form the pile, constructed and operated substantially as described.

Third. The devices for locking and unlocking the beam or beams containing the warp, substantially as described.

JOHN GOULDING.

No. 9172.—*Improvement in Ox Yokes.*

I do not claim the slides, independently of their connexion, as they have been previously used. But having thus described the nature of my invention, what I claim as new, and desire to secure by letters patent, is the connecting of the slides, B, B, in which the bows are secured by means of the chains, E, E, and rods, G, G, the chains passing over the pulleys, F, F', by which neither of the slides nor bows can be moved laterally without communicating a corresponding opposite motion to the other, thus keeping the oxen at all times at equal distances from the centre of the yoke; the chains, rods, and pulley being arranged as shown and described, or in any other manner substantially the same.

EZRA HOUGH.

No. 9173.—*Improvement in Elastic Horse Shoes.*

What I claim, and desire to secure by letters patent, is the shoe formed with two plates, between which a sheet of vulcanized rubber, or other elastic substance, is interposed, in the manner and for the purpose herein set forth.

JOHN O. JONES.

No. 9174.—*Improvement in Scythe Fastenings.*

Now I would remark, that I do not claim the invention of confining the shank to the snath by fastening contrivances, applied both to the heel and toe of the scythe, particularly when the fastening contrivance of the toe is made to press against the toe in a direction *towards* the heel of the scythe, as under such circumstances the variation of the angle of the blade and snath is generally limited to certain fixed positions. But what I do claim as my improvement is to make the fastening bolt of the toe act against the side of the toe, or *laterally* against the shank in combination with making it, or the bolt and shank with the peculiar curved projection, *d*, and recess, *e*, and the flattened faced stirrup, *G*, or confining contrivance of the heel of the shank, so as to allow of the lateral position of the heel being changed or varied as specified, whereby the angle of the shank part of the snath and of the blade may not only be varied to any extent within certain limits, but the toe of the shank as usually made, confined down by other means than that which operates to secure the shank (at its heel) to the snath.

ALPHEUS KIMBALL.

No. 9175.—*Improvement in Processes for making Illuminating Gas.*

What I claim as my invention, and desire to secure by letters patent, is the process of manufacturing illuminating gas, substantially as herein set forth, viz: the process of feeding into heated retorts, charged with bituminous coal, either oil, coal, tar, resin, asphaltum, or any other bituminous or carbonaceous substances, separately or mixed, and reduced to a fluid state, and decomposing the same in the same retort, and by the use of the same heat, in conjunction with the distillation of the coal, in the manner and for the purposes substantially as herein described.

HENRY W. ADAMS.

No. 9176.—*Improvement in Double Gates.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the forked rods, *h*, *h*, or their equivalents, in combination with the inclined track, *e*, and roller, *f*, for the purpose of causing the gate always to swing in the direction *from* the rider, substantially as herein set forth.

I also claim the combination of the latch, *q*, catch, *t*, and pin, *r*, or their equivalents, substantially in the manner and for the purpose herein set forth.

J. S. BROWN.

No. 9177.—*Improvement in Casting Type.*

What I claim as my invention, and desire to secure by letters patent, is the employment in type casting machines of an adjustable valve, substantially in the manner described.

WM. P. BARR.

No. 9178.—*Improvement in Cider Mills.*

Having thus described the nature and operation of my invention, I will now state what I claim as new, and desire to secure by letters patent: I claim the employment of the revolving crushing cylinder or roller, F, with grooves cut in its periphery, the movable feeding slats or radial cogs, J, the eccentric rings or plates, L, M, and the scrapers, R, R, the whole being constructed, arranged, and operating in the manner substantially as and for the purpose herein set forth.

JARVIS CASE.

No. 9179.—*Improvement in Machines for Dressing Stone.*

In behalf of the within-named Alexander Catlin, I claim the revolving arms or wheel, having a cavity near its centre to receive the core of the stone, in combination with the revolving cutters, in the manner and for the purpose herein described.

H. W. CATLIN, (*Administrator.*)

No. 9180.—*Improvement in the method of securing movable points of Railroad Frogs.*

What we claim as new in our invention, and desire to secure by letters patent, is the combination of the peculiarly formed shank of the frog point and its corresponding channel and socket, said points secured to its seat by spike and bolts, or their equivalents, substantially as described.

M. S. CURTIS.

E. ST. JOHN.

No. 9181.—*Improvement in Tanning.*

Having thus described my process of tanning leather, what I claim as my invention, and desire to secure by letters patent, is the combination of the sulphate of potash with the tanning liquor, substantially in the manner and for the purpose herein set forth.

A. K. EATON.

No. 9182.—*Improvement in Grain and Grass Harvesters.*

What we claim as our invention, and desire to secure by letters patent, is—

First. The construction of the floor in the centre, upon which a man may stand to gather the grain.

Second. The construction of the rim, K, to which the knives are attached, for the purpose of giving the butts of the grain a bed to stand upon while being carried through the channel to the centre.

Third. The constructing a spiral channel within the guards, for the purpose of gathering the grain within the central space.

DANIEL FITZGERALD.
JOHN H. SMITH.

No. 9183.—*Improvement in Carriages.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Making the hubs of wheels of two disks of wood, with angular scores cut in them, to which the spokes are fitted, so that as the disks are drawn together they bind the sides as well as the edges of the spokes, said disks of wood being fitted to, and confined between, two plates of metal, substantially as described.

Second. The sliding perch, H, in combination with the levers, *c, c*, and *g, h*, ratchet-wheel, I, and pawls, *l* and *k*, or such analogous devices equivalent to these as will raise the hind end of the body of the carriage and load when the hind axle stops, while the fore one moves forward; the weight of the hind end of the body and load aiding, as it descends, in propelling the hind axle forward; the body being made to slide upon the rocker of the forward axle, as described, or otherwise.

Third. The sliding perch, H, in combination with the levers, *c, c*, and *g, h*, or such analogous devices equivalent thereto as will raise the load, or a part of it, when the team or moving power starts, so as to partially relieve the team and carriage from the sudden jerk and shock to which it is subject when the connexion is firm and unyielding.

JONATHAN FOX.

No. 9184.—*Improvement in manufacture of Glass Lenses.*

What I claim as my invention, and desire to secure by letters patent, is the manufacture of dioptric lenses of glass in steps or rings, by pressure in metallic moulds, substantially as specified.

JOHN L. GILLILAND.

No. 9185.—*Improved method of converting Reciprocating into Rotary Motion.*

What I claim as my invention, and desire to secure by letters patent, is an apparatus, substantially such as is herein described, for converting a reciprocating motion into a rotary one, or converting a rotary into a reciprocating motion, consisting of the wheel, B, levers, E, D, G, H, and connecting rods, M and N, or their equivalents, for the purposes specified.

CHAS. HOWARD.

No. 9186.—*Improved mode of drying Sized Paper.*

Having thus fully described our invention, what we claim therein as new, and desire to secure by letters patent, is the process of drying sized paper by passing it between a series of trunks perforated on two sides, and so arranged that the hot air passing through these perforations will come

in contact with both sides of the paper and then escape, and not run or be confined with the sheets.

JOSEPH KINGSLAND, JR.
NORMAN WHITE.

No. 9187.—*Improvement in reducing Gold Minerals.*

I do not claim the use of lime when forming fluxes; but what I claim is the use of iron, substantially as described, to extract portions of gold when the same are not readily precipitated by their density.

WILLIAM LONGMAID.

No. 9188.—*Improvement in Looms for weaving Pile Fabrics.*

What I claim as my invention, and desire to secure by letters patent, is the spring flaps, *v*, *v*, or their equivalents, which open and close the pincers upon the wires, and support the wires after they are drawn from the loops and carried to a proper position to be inserted between the sheds of warp, and guiding them into the same, substantially as described.

SAMUEL RICHARDSON.

No. 9189.—*Improvement in Railroad Car Brakes.*

Having thus fully described and represented the nature and operation of my improved mode of rendering railroad car brakes inoperative at the pleasure of the engineer or man in the locomotive tender, and thus dispensing with a corps of brakemen, what I claim therein as new, and desire to secure by letters patent of the United States, is the method of arranging and operating the parts which render the brakes inoperative at the pleasure of the engineer or other hand, viz: Hanging the drops, (*a*,) from arms, (*v*,) on arbors, (*t*,) with arms, (*s*,) projecting in a contrary direction to the arms, (*v*,) the arms, (*s*,) being connected by links, (*q*) and (*r*), midway to a lever, (*k*,) the end (*l*) of which is the fulcrum; the power being applied to the other end, through the eye, (*m*,) by means of the rope, (*n*,) which passes through loops (*o*) along the entire train, to the rear end of which it is made fast; the same devices being repeated and capable of instantaneous action on each car—this arrangement thus having nothing in itself antagonistic to the end in view; the rope (*n*) being always slack, and by its own weight and motion, when the train is under way, keeping the drops (*a*) up and out of the way of the brakes, so that the brakes are always operative, unless the engineer, by winding up the rope, (*n*,) throws down the drops, (*a*,) and renders the brakes inoperative for the time being; the whole being substantially as described and represented; by no means intending to claim, however, the interruption of the operation of the brakes, actuated by the crowding of the cars upon the locomotive, by the interposition of drops, when these are interposed by mechanism, the weight and motion of which, when the train is under way, is antagonistic to the counter-balance intended to keep the drops up and out of the way of the brakes.

JOHN SCHOENHERR.

No. 9190.—*Improvement in Hats.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The attaching to a hat a ring, or part or parts of a ring, inside, to fit upon the head, and leave a space around it, for the purpose of producing ventilation, in the manner substantially as above described.

Second. I claim constructing a band, for the purpose of fitting easily to the head, of thin metal, made flexible by cutting out part of the substance, in the manner substantially as above described in the strip, fig. 4.

BENJAMIN SHERWOOD.

No. 9191.—*Improvement in Machinery for Threading Wood Screws.*

What I claim as my invention, and desire to secure by letters patent, is—

First. An annular concave burr-cutter, for threading screws, having a helical or conical serrated thread, substantially as described.

Second. The combination of two moving rests on opposite sides of a revolving screw-cutter, with the mechanism herein described, or the equivalent thereof, for operating the same in such manner as to move them simultaneously towards and from the cutter to press the blanks against the latter to be threaded, and so that the pressure of one blank in one direction may be counteracted by the pressure of another blank in the opposite direction, as set forth.

Third. The combination of the vibrating rests with the vibrating, rotating turn screws, substantially in the manner herein described, so that the blank may be rotated steadily and with regularity, while the rest is carrying it towards the cutter to sink a screw thread on it.

CULLEN WHIPPLE.

No. 9192.—*Improvement in Mill Dress.*

I do not claim a circular mill stone dress in which the furrows are arcs of circles swept from a single centre; but what I do claim, and desire to secure by letters patent, is the particular mill dress represented in fig. 1, and laid down by the pattern shown in fig. 2, constructed and arranged as described, or in any manner substantially the same.

JOHN W. KANE.

No. 9193.—*Improvement in Ventilators.*

I do not claim the upper cylinder, *a, a*, the flanges, *b, b*, attached thereto, the lower cylinder, *f, f*, nor either set of the wings upon a vertical shaft therein. But what I do claim as new, and desire to secure by letters patent, is the two cones, *d, d*, and *e, e*, arranged and combined with a ventilator composed of revolving vanes, and flanges, and cylinders, operating as above described and set forth.

MORTIMER M. CAMP.

No. 9194.—*Improvement in File Cutting Machinery.*

Having described our improvements in machinery for cutting files, what we claim as our invention, and desire to have secured to us by letters patent, is, as herein constructed and combined, the racks, *r*, pinions, *s*, cams or eccentrics, *K*, rods, *L*, and springs, *q*, in connexion with the vibrating hammer, *F*, as described, for the graduation of the blow at the commencement of the operation.

JOHN W. CONKLIN.
HENRY L. SIDMAN.
EUGENE WHRIT'NER.

No 9195.—*Improvement in Machine for making Wrought Iron Railroad Chairs.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is—

First. The arrangement and combination of the feathered wedge and dies, as described, for filling the cavity between and fitting around the knuckle end of the shears and benders, forming an adjustable, solid, and level bed for the centre of the plate whilst being cut and bent, and preventing the fulcrum of the shears and benders from moving towards the centre away from the set screws.

Secondly. I claim furnishing the caps of the pedestals with adjustable cutters, the cutting edges of which are nearer to each other at the outer than at the inner end, and which shear the plate in conjunction with the cutters on the face of the shears, which are narrower at their outer than at their inner end, in order to cut the clip of the chair narrowest at the point, and thereby leave it perfectly free and clear of the cutters in the cap, so that the cap will lift free from the plate.

ROBERT GRIFFITHS.

No. 9196.—*Improvement in Spark Arresters.*

Having thus fully described our invention, what we claim therein as new, and desire to secure by letters patent, is combining with a stack or chimney provided with chambers and openings, for separating and passing out the smoke and gases, and retaining the sparks, substantially such as herein described, the draught flue around the stack, which takes in air at the bottom, and furnishes at the top of the chimney additional draught, to supply that impeded by the separation of the sparks; the whole being arranged substantially as herein set forth.

JOSEPH LEEDS.
GEORGE H. OAT, JR.
ALFRED A. OAT.

No. 9197.—*Improvement in Cotton Presses.*

Having thus fully described the nature and operation of my press, what I claim therein as of my invention, and desire to secure by letters patent, is the arrangement of the press herein-above described in such manner that it may be conveniently charged in an upper story of the

building in which it is placed, and actuated and discharged in a lower story of the same, substantially as herein set forth—reference being had in my claims for letters patent to the drawings and specifications as filed and herein-before set forth.

LEWIS LEWIS.

No. 9198.—*Improvement in Hernia Truss.*

What I claim as my invention, and desire to secure by letters patent, is the peculiar shape of the two balls, F, F', and their arrangement upon the slides, L, L, so that they may be moved upward and downward, and right and left, to any part of the metallic plate, Y, Y, on the pubic brace, and thus be fitted to any rupture in the abdominal rings, or on any sized person, and their combination with the pubic brace, as above described.

A. J. LOUNSBERRY.

No. 9199.—(Suspended.)

No. 9200.—*Improvement in Artificial Legs.*

I am aware that the *tendo Achillis* has been extended upward and attached to the thigh piece, for the purpose of drawing upward the heel, and depressing the forward part of the foot, when the leg is straightened; and, therefore, I do not claim that arrangement as my invention; but what I do claim as new, and desire to secure by letters patent, is attaching the upper end of the *tendo Achillis* to a lever, or to its equivalent mover; which is united to an auxiliary tendon, that descends from its connexion with the thigh piece; and, also, the so arranging of the said lever and tendons that, when the weight of the person is thrown upon the ball of the foot, in walking, the powerful downward strain which will thereby be exerted upon the *tendo Achillis* will exert little or no influence upon the said auxiliary tendon, (which descends from the thigh-piece,) or, at any rate, no influence that will have an appreciable tendency to bend the knee or give instability thereto, substantially as herein set forth.

I also claim the vibratory brace, *p*, and elastic cord, *m*, operating in combination, substantially in the manner and for the purposes herein set forth.

B. FRANK PALMER.

No. 9201.—*Improvement in Neck-Yoke of Horses.*

What I claim as my improvement, and desire to secure by letters patent, is the spiral springs, operated by the rods, giving extension and contraction to the yoke, in the manner and for the purpose herein set forth.

CALVIN L. RAWDON.

No. 9202.—*Improvement in Artificial Legs.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is so operating the lever, *f*,

through the spring, L, by means of the cords, *i, j*, which are respectively attached to, and operated by, the toe and heel part of the foot, that, when the leg is bent forward or back on the ankle joint, the knee joint shall be locked by said lever, substantially as described.

JONATHAN RUSSELL.

No. 9203.—*Improvement in Bedstead Fastenings.*

What I claim as my invention, and desire to secure by letters patent, is the plug, as above described, in combination with the clamp, or clamps, for fastening bedsteads.

WILLIAM SHAW.

No. 9204.—*Improvement in Hot Air Furnaces.*

Now I do not claim a descending draught as such, or an alternately descending and ascending draught; nor do I claim a draught divided and carried in different directions through several pipes or columns at a time; nor do I claim one undivided draught carried through several pipes or columns at a time. But what I do claim as my invention is the combination and arrangement of the ash or soot separate chambers and the flues, from whose external surfaces the heat is radiated into the air-chamber of the hot air furnace—that is to say, I claim the combination and arrangement of the descending flue, A¹, (at and down the back of the fireplace,) the ash flue chamber, B¹, the ascending and descending arched pipe, C¹, the ash-flue chamber, D¹, the ascending and descending arched flue or pipe, F², the ash-flue chamber, L¹, the ascending and descending arched pipe, G¹, the ash-flue chamber, H, and the vertical flue discharge pipe, I¹, carried up against the back of the fireplace, and having a communication with the fireplace and a damper, all substantially as specified.

GEO. S. G. SPENCE.

No. 9205.—*Improvement in Machines for forming Hat Bodies.*

Having thus described the construction and operation of the parts. I wish it to be distinctly understood that the apparatus for picking and separating the fur forms no part of my invention; neither does the movable trunk; all these parts being well known and in ordinary use in cotton pickers and gins. Neither do I claim retaining the fibre on the former by exhaustion by a blower, that being public property, having been shown in a patent issued to T. R. Williams, in England, in 1833; neither do I claim the use of water to form the packing for the cylinder, *i*, that having been used in other machinery; and hot and cold water have been used in felting cloth and hat bodies: therefore this forms no part of my claim.

I do not limit myself to the screw to raise and lower the former and trunk, as a rack and pinion, or similar means, may be used. But what I desire to secure by letters patent is—

First. I claim the combination of the water packed cylinder, *i*, former, *k*, and sliding and revolving shaft, *h*, for the purposes and as described.

Second. I claim giving alternate motion to the former, *k*, and blower-case, *f*, so that one is raised while the other is lowered, in the manner and for the purposes described.

Third. I claim the hood, *r*, with its lining, by which steam or other gaseous pressure is made to force the bag or lining on to the bat or former, in combination with the standing perforated pipe, 18, or its equivalent, by which the bat is wetted through the perforations in the former, as described and shown.

THOS. WALBER.

No. 9206.—*Improvement in Calorifères.*

What I claim as my invention is the combination of the water supply reservoir, the chamber or bed of sand, and a furnace or chamber of combustion; the whole being made to operate substantially as specified.

SAMUEL WHITMARSH.

No. 9207.—*Improvement in the Currier's Beam and Knife.*

What I claim as my invention, and desire to secure by letters patent, is the construction of a currier's beam, *B*, with flaps, *C*, *C*, on its edges, furnished with springs, *a*, and gauges, *D*, *D*, or their equivalent, for the purpose of dispensing with the kneeing and prevention of cutting through, and production of regular thickness of leather.

I also claim the construction of a knife, made adjustable by the eccentric handle, *J*, *j*, *k*, or its equivalent, in connexion with the gauges or guides, *D*, *D*, substantially as and for the purpose set forth in the foregoing specification and accompanying drawings.

J. D. WILLOUGHBY.

No. 9208.—*Improvement in Processes for making Paints.*

I am aware that various mixtures of gelatine, albumen, gums, and gum resins, have been used in watery solutions for making a cheap paint that cover extensive surfaces; but such paints as the gums dry, crack, and leave fissures in the surfaces so covered, and have other defects. I do not, therefore, claim the use of watery solutions with such materials; but what I claim as my invention is the use of a watery solution of the sulphate of zinc, to be mixed with white lead, zinc white, or other oil paints, in the manner herein set forth.

WASHINGTON F. DAVIS.

No. 9209.—*Improved Fastener of Bits to Braces.*

Having thus described my improved hand-drill or brace, what I claim as new therein, and desire to secure by letters patent, is the combination of the cam-lever with the lever spring catch for securing the bit in the socket, and releasing it therefrom; the same being constructed, arranged, and operating substantially as described.

ERASMUS SMITH.

No. 9210.—*Improvement in Manufacturing Cord Buttons.*

What I claim as my invention, and desire to secure by letters patent, is the preparation of the cords in the process of manufacturing cord buttons by gluing them together, substantially in the manner and for the purpose herein set forth.

NELSON PERKINS.

No. 9211.—*Improvement in Bill Registers.*

Having thus described my invention, I will now proceed to state what I claim, and desire to secure by letters patent :

In combination with the perpetual calendar, in the same table, frame, or box, A, I claim the bill-register, consisting of the strips or sheets of paper, or other material, D, D, suitably ruled for names and amounts, and inserted in or attached to the table, frame, or box, in any convenient way, so as to be easily removable or renewable on either side of the column of days of the month and week, under suitable headings, which denote whether the bills are payable or receivable, as herein substantially set forth.

J. N. AYRES.

No. 9212.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the placing the separators, *a* and *b*, in the front and back descending and ascending flues of a cooking stove, to divide the products of combustion, whilst they are permitted to pass undivided over the top and under the bottom plates of the oven, substantially as described in the above specification.

R. J. BLANCHARD.

No. 9213.—*Improvement in Instruments for Lasting Boots.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the two levers, (L, L,) connected together and connected to the jaws, (J, J,) also connected to the step, (S,) by which combination (on opening the pincers) the simultaneous motion of the two jaws is guided, so as to take hold of both sides of the leather, by pressing the handles towards each other, and bring up the leather with equal tension on both sides. I claim this for the purpose and in form substantially as above described.

HEZEKIAH CONANT.

No. 9214.—*Improvement in Machine for Cutting Cheese.*

I do not claim the mere combination of a disk and spindle ; but what I do claim as my invention is the combination of the groove, *b*, and the slot, *a*, with the spindle and its sustaining board, so as to guide the point of the knife and support the pointed end of the knife when the knife is forced down through the cheese as stated.

And in combination with the groove, *b*, slot, *a*, and plate, or board, *A*, I claim the secondary rotary board, *C*, to be applied and used substantially in manner and for the purpose as specified.

W. K. FOSTER.

No. 9215.—*Improvement in Beds for Invalids.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is suspending the sheet, hammock, or mattress upon which the patient lies to a carriage which moves on a frame placed over or around a common bed, so that by said carriage the patient may be raised up or let down upon the bed, or moved from one place to another, or gently exercised; the whole being arranged and operating substantially in the manner herein described and fully shown.

S. D. HOPKINS.

No. 9216.—*Improvement in Instruments for Lasting Boots.*

I do not claim as my invention the screw, *f*, the standard, *e*, the nut, *g*, or the arms, *a*, *a*, *a*, *a*; but what I do claim as my invention, and desire to secure by letters patent, is the mode of bringing the arms together by the means of the slots in the arms and the bolt operating in the slots, when this is used in combination with the standard, *e*, substantially in the manner herein described.

BENJAMIN LIVERMORE.

No. 9217.—*Improvement in Telegraph Signals.*

What I claim as my invention, and wish to secure by letters patent, is the formation of a complete system of telegraphic signals by means of a vertical arrangement of white and colored lights, or their equivalents, by which any number and species of signals may be made with ease and simplicity.

CHARLES LATIMER, U. S. N.

No. 9218.—*Improvement in Churns.*

I claim, first, the forcing of the milk through a rack by revolving the churn in an orbit, without turning it on axis.

Second. The bow and rods connected together, as above described.

RUFUS MAXWELL.

No. 9219.—*Improvement in Abutment Motion for Reversible Rotary Engines.*

What I claim as my invention, and desire to secure by letters patent, is the combination, for the purpose of withdrawing the sliding heads at proper intervals and returning them, whichever way the engine is working, of the rods, *b*, *c*, *b*¹, *c*¹, *b*¹¹, *c*¹¹, the levers, *f*, *f*¹, *f*¹¹, and, *g*, *g*¹, *g*¹¹, the wheels, *I* and *I*¹, with their wedge-shaped projections, or in-

clines, *L*, and the springs, *M*; the whole arranged and operating in any way, substantially as set forth.

C. A. MILLS.

No. 9220.—*Improvement in Machines for cutting Hand Rails.*

What I claim as my invention, and desire to secure by letters patent, is arranging the rollers, *W*, *X*, one above the other, within a revolving frame, *Y*, so as to allow of the curved roller, *X*, or its equivalent, being substituted for the roller, *W*, at the time desired, and in the manner and for the purpose herein fully specified.

GEORGE B. PULLINGER.

No. 9221.—*Improvement in Horse Powers.*

Having thus fully described my improved horse power, what I claim therein as new, and desire to secure by letters patent, is, first, the combination of the canting tread-wheel, (*f*,) and horizontal sweep shaft, (*g*,) and friction wheel, (*h*,) for producing motion in the manner described, by which the wheel (*h*) is always running down hill by throwing the weight of the horse on to the canting wheel, (*f*,) just forward of it, as above described.

DAVID RUSSELL.

No. 9222.—*Improvement in Mechanism for Griping Wood Screw Blanks.*

What I claim as my invention, and desire to secure by letters patent, for operating the gripping-jaws on the mandrels of machines for threading or shaving the heads of wood screws, is the employment of a wedge on a stem within the mandrel, to act on the jaws to close them, substantially as specified, when the said wedge stem is combined with a sliding frame, (or its equivalent,) by means of an interposed spring, substantially as specified, for the purpose of adapting the jaws to the grippers of blanks of varying sizes, as set forth.

And I also claim, in combination with the said spring connexion, for the purpose specified, the making of the wedge faces curved, substantially as specified, to insure an equal, or nearly, force on the gripping-jaws, as set forth.

THOS. J. SLOAN.

No. 9223.—*Improvement in Threading Pointed Wood Screws.*

What I claim as my invention, and desire to secure by letters patent, is giving to the mould or former, or its equivalent, motion, substantially as specified, whereby the cutting away of the metal at the end of the shank is divided amongst several threading motions, instead of being cut away at the first threading motion, as heretofore practised.

THOS. J. SLOAN.

No. 9224.—*Improvement in Railroad Trucks.*

I claim as my invention, first, the combination of the brake, I, with the wheel, C, and rail, E, arranged and operating substantially as described; and second, making the wheel, C, substantially as herein described, for the purposes of preventing from clogging with snow or other substances, and giving it a better hold upon the rail, as above suggested.

EDWIN STANLEY.

No. 9225.—*Improvement in Apparatus for Feeding Boilers.*

What I claim as my invention is the combination of the heater, or vessel, D, and its pipes, I, K, and stop cock, L, M, or either of them, with the tank, boiler, and force pump, so as to operate therewith, or enable the force pump to be operated, substantially in manner and under the circumstances as above set forth.

ANDREW WALKER, JR.

No. 9226.—*Improvement in Mills for mixing Clay and mashing Vegetables.*

What I claim as my invention, and desire to secure by letters patent, is the use of grated hollow cylinders operating together so that the grates of one cylinder mash between the grates of another cylinder of like construction, thereby forcing the material operated upon from the periphery of the cylinder, or cylinders, to the inside of such cylinders, thereby mashing, grinding, and mixing the same, as above set forth.

CLARK ALVORD.

No. 9227.—*Improvement in Reverberatory Furnaces.*

Having thus explained my invention, I claim the reverberatory furnace constructed as described. The fuel, with the fire-box, A, being above the metals to be melted in the chamber B, and bringing the flame and heated products of combustion vertically down through the metals in the chamber B, in the manner and for the purposes set forth.

CHRISTOPHER GUY BEST.

No. 9228.—*Improvement in Wash Boards.*

What I claim, and wish to secure by letters patent, is the curved or circular form of crimp, giving a better chance for the seeds and water to remain amid the clothes during the process of rubbing, and also keeping the water near the centre of said board; thus rendering the work easier than the old fashioned form.

LESTER BUTLER.

No. 9229.—*Improvement in Saw Sets.*

Having thus fully described our improved saw set, what we claim therein as new, and desire to secure by letters patent, is the stamps, *e, e*, &c., alternating with the spaces, *i, i*, &c., upon the end of a cylinder,

E, in combination with a bevelled cylinder, F, which is caused to revolve with equal velocity in the direction opposite to that of the cylinder, E; arranged in the manner and for the purpose substantially as herein described.

ABEL BRADWAY.
ELIJAH VALENTINE.

No. 9230.—*Improvement in Kilns for Burning Pottery.*

Having thus described the nature and objects of my said improvements, together with the manner of carrying the same into effect, I have to add, that what I claim as my invention, and desire to secure by letters patent, is the arrangement of the fire hearth below the oven bottom, and provided with suitable apertures for the admission of air to regulate the combustion, substantially as described, when this is combined with the oven or heating chamber, provided with a tube, or the equivalent thereof, as specified, for discharging the heat above the bottom of the oven and diffusing it in the oven; and also provided with outlet flues or apertures at or near the bottom, and with apertures or tubes at or near the top, for the discharge of gases or steam, all substantially as herein described and for the purposes specified.

GEORGE ROBINS BOOTH.

No. 9231.—*Improvement in Blind Operator and Fastener.*

Having thus described the nature of my improvement in blind operators, what I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the sliding plate, (*f*), provided with a notch, (*d*), and extension rod and handle, (*a*, *b*), with the vibrating link (*h*), and fastening, (*l*), and with the catch, (*i*, *j*), and notches, (*k*), by which I am enabled to operate a blind from the inside, by a straight shove or pull, as the case may be, and to fasten it shut, or partially open, as required.

JAS. R. CREIGHTON.

No. 9232.—*Improvement in Artificial Legs.*

I do not claim the use of a spring to throw the lower part of the leg forward; but I am not aware of any straight or curved spring having been used with a skeleton knee, as herein shown.

I do not claim the open skeleton to receive the stump, as the ordinary wooden legs have been secured by straps and bands, acting in the same manner and for the same purpose.

What I desire to secure by letters patent is—

First. I claim the skeleton knee piece, *d* and *e*, in combination with the spring, *f*, attached at its ends to the upper and lower parts of the leg, as described and shown.

Second. I claim the arrangement of the spring toes, 4, on their centre, *o*, kept down by the spring, 5, as described and shown.

Third. I claim the locking piece, *r*, and hook, *s*, to allow of the bending of the leg, as described and shown.

JOHN S. DRAKE.

No. 9233.—*Improvement in Oil Cans.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the receiving chamber, D¹, with the chamber, D, and flange, L; the whole being constructed and arranged, and operating in manner and for the purpose substantially as herein set forth and specified.

SAMUEL FIELD.
CHAS. W. HEALD.

No. 9234.—*Improvement in Printing Presses.*

Having thus fully described and explained my improvements, I do not claim the periphery of a cylinder as a distributing surface for the ink; nor the segment of the cylinder to form a place for the form of type, so arranged by catches and stops that it may be turned over any distance to receive the form, (as in the Voorhies press.) But what I do claim is the arrangement and application of a cylinder which always remains stationary in its own position, as well while receiving the form as when used as a distributing surface.

I do not claim an arm or single frame to carry one set of rollers around the periphery of a cylinder, (as in the Voorhies press.) But I do claim the combination and arrangement of several sets of rollers in *one frame*, to traverse round the periphery of a cylinder, when these sets of rollers alternately, or consecutively, pass over the form and admit an impression to be taken between the time one of the sets leaves the form and the next set arrives to it, for the purpose of giving slow motions to the inking, with rapid impressions upon the same form, thus effecting more speed as regards the amount or number of impressions to be produced in a given time.

I do not claim the continuous sheet, nor feeding a continuous sheet of paper to a printing press. But I do claim the arrangement of the gauge, (1,) guides, (2,) pawl, (r,) cranks, (s and d¹;) rod, (E¹;) pin, f, and wheels, (a¹;) in combination with the shears for cutting off the sheet after it is printed, and the cam, (y,) from which it receives its motion, the whole of these parts operating as described; all of which is herein fully described and set forth.

GEO. P. GORDON.

No. 9235.—*Improvement in Washing Machines.*

Having described my improvement, what I claim as my invention, and desire to secure by letters patent, is the providing a washing machine with a hinged flap rubbing board, E, or its equivalent, for turning the clothes in the tub, in combination with the dasher, B, and hinged presser, C, for the purpose set forth and shown in the specification and accompanying drawings.

J. T. MUDGE.

No. 9236.—*Improvement in Governors for Steam Engines.*

What we claim as new, and desire to have secured by letters patent, is the combination of the quadrants, (i, i,) and the cylindrical rack, (3, 3,)

arranged and operating substantially as set forth, not confining ourselves to the cylindrical form of the rack ; other forms may be used if found to suit, such as square or any polygon form.

GEO. S. STEARNS.
WILL. HODGSON.

No. 9237.—*Process for Restoring Shape and Tempering Articles of Hardened Steel.*

And having now described my said invention, and the manner in which the same is to be performed, I declare that what I claim is the curing or remedying the distortion which has taken place in steel plates during the operation of hardening, by compressing them between dies, previously heated to a sufficient degree to “bring back,” or “let down” the temper ; the mechanical pressure to be applied while the plates are in the course of being tempered, (the pressure being continued during the process of tempering,) as before exemplified and described.

JOHN SILVESTER.

No. 9238.—*Improvement in Brick Machines.*

Having thus described our improvements, what we claim, as of our invention, is as follows :

We claim combining with the percussion machinery the lower piston, or pistons, and machinery, to produce a compression of the bottom surface of the brick, and machinery to produce a compression of the *top surface* of the brick, the whole being substantially as herein-before described ; not meaning such compression of the same as is produced by the percussion of the ram, but as a separate compression, effected by other means, as described.

We also claim the improvement of constructing each of the orifices of the *mould charger* with the flaring or inclined sides inclining inward towards each other as they descend ; the whole being substantially in manner, and to effect the object or overcome the difficulty, herein-before stated.

We also claim the improvement of combining with the adjustable gate or striker a mechanism that will cause it to *rise upwards* as the mould-charger moves forward towards the moulds, such rising upwards of the striker being for the purpose herein-before explained.

ARAD WOODWORTH, 3d.
SAML. MOWER.

No. 9239.—*Improved Metallic Stuffing-Box for Packing in Steam Engines.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is the combination of an elastic ring, made to fit tightly on the rod, and loosely in the stuffing-box, and having an intercepting tongue and spring-plate to prevent the steam from escaping through the slot therein, with the plate, D, or its

equivalent, fitting tightly over the ring, and loosely encircling the rod, and the gasket or its equivalent above said plate, substantially as described.

EBENEZ. WINSHIP.

No. 9240.—*Improvement in Electro-Magnetic Fire Alarms.*

I claim the combination and arrangement of a signal wheel with two electric circuits, so that when one is broken the wheel may revolve, and operate a key in the other circuit.

Second. I also claim the mode of constructing an elastic circuit, by breaking, lapping, and binding with a combustible material, or equivalent, for the purpose of making it sensitive to fire, as herein described.

HENRY VAN ANSDALL.

No. 9241.—*Improvement in Smoothing Irons.*

What I claim as my improvement, and desire to have secured by letters patent, is—

Firstly. The basket grate formed by the bars, (1, 1, 1, 1,) as mentioned in the specification.

Secondly. I claim the concave form (7) in the top of the smoothing portion of the iron, (c, c,) all for the purposes set forth.

FEDRAL C. ADAMS.

No. 9242.—*Improvement in Machines for making Carriage Wheels.*

What I claim as my invention, and desire to secure by letters patent, is the manner of feeding up the boring spindle slowly and bringing it back speedily, whilst the driving spindle is turned constantly in one direction, and with the same velocity, viz: by connecting the driving spindle, *p*, to the boring spindle, *q*, by means of the collared bar, *l*, and by a cog-wheel, *n*, on the former, gearing into a pinion, *o*, on the latter, and by screw-threads formed upon the said spindles, which can be alternately operated upon by the segmental nut, *r*, which is placed between them, and actuated by the lever, *s*, substantially as herein set forth.

CHAUNCEY H. GUARD.

No. 9243.—*Improvement in Refrigerators of Wort.*

Having thus described my improved apparatus for cooling beer and other fermentative liquors, what I claim as new, and desire to secure by letters patent, is the series of deep, narrow, open chambers, *a'*, *a*, when made with vertical partitions, *b*, *b*, so as to form passages, *c*, at the bottoms thereof, for imparting to the wort a direction downward and upward through the said chambers, in combination with shallow chambers, *e*, with which the aforesaid chambers successively communicate, and the enclosed chambers, *h*, through which flows, in direction opposite to that of the wort, a current of cold water, in the manner and for the purpose herein set forth and shown in the drawing.

ADOLPH HAMMER.

No. 9244.—*Improvement in Apparatus for Feeding Chickens.*

I do not claim attaching and arranging the doors to the case so that said doors will open outwardly, as this has been previously done. But what I claim as new, and desire to secure by letters patent, is attaching and arranging the doors, E, E, to the case in such a manner that said doors will open inwardly instead of outwardly when the fowls tread upon the steps, F, G; the doors being attached to the case and arranged as described, or in any equivalent way.

SIMEON WILLARD ALBEE.

No. 9245.—*Improvement in Railroad Signals.*

I do not claim the simple combination of a bell hung to a spring, a cord or chain leading therefrom, and a tripping lever or apparatus, which, when moved in one direction, shall pull the cord and cause the bell to vibrate, as this is a well known combination, applied to doors, for the purpose of sounding an alarm. But what I do claim as my invention, is the combination of a single bell, D, a spring, E², two cords, E, E¹, and two or more tripping arms or levers, F, F¹, as applied to a railway and supporting frame at a road-crossing of such railway, and so that the contraction of one of the two ropes by change of temperature, or otherwise, may be counterbalanced by that of the other, and not draw the bell laterally out of place, as it would be likely to were but one rope or wire used.

And I claim the combination of the weighted or heavy flag or signal board, M, with its suspension chains or cords, m, m, the windless barrel, O, the overbalance weight or weights, P, P¹, and suspension cords or chains, Q, Q¹, the leading cord, R, or R¹, passing over the pulley S, or S¹, the tripping lever, T, or T¹, the spring-catch, U, and its cord, r, and the tripping lever or arm, u, all being arranged and made to operate together, substantially as specified.

AURIN BUGBEE.

No. 9246.—*Improvement in Preserving India Rubber.*

And be it further known that the nature of my discovery is applying the before-mentioned quantity of Campeche salt, or muriate of soda, to the rubber in its sap state, and by so doing preventing putrefaction and fermentation of the juice, to which more especially I confine the claim of my invention, and for which I desire to secure letters patent.

F. BRONNER.

No. 9247.—*Improvement in Grain Harvesters.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The arrangement and combination of two cylinders, A, A, with each other, for the purpose of cutting and bringing the cut grain into the middle between them, and delivering the same to the crib, as above described.

Second. The construction of the cam-cutter, W, and cam-fingers, (H,

I, J,) so constructed as to be drawn in for the purpose of allowing the cylinders to throw the cut grain into the crib, as above described.

Third. The use of a slot or channel, U, to regulate the movement of the fingers, as above described.

Fourth. The arrangement and construction of a crib, (F,) made to receive from the two cylinders, A, A, and hold the cut grain upright, so that it can be readily taken out for binding, in the manner above described.

DANIEL FITZGERALD.

No. 9248.—*Improvement in manufacture of Common Salt.*

What I claim, and wish to secure by letters patent, is the use of a screen, false bottom, or floor in the vat or pan containing saline waters or brine for manufacturing salt, to separate impurities or bitterings from the salt, substantially as herein described, or any other mode substantially the same.

JAMES P. HASKIN.

No. 9249.—*Improvement in manufacture of Sulphuric Acid.*

What I claim as my invention, and desire to secure by letters patent, is concentrating sulphuric acid in leaden vessels to the strength of 66° Baumé, and at a temperature below the boiling point of the acid.

I also claim the long conducting and escape pipe, in combination with the agitating apparatus, for condensing the deleterious gases, and preserving a pure and wholesome air in the neighborhood of the establishment.

CARL HINRICHS.

No. 9250.—*Improvement in the Composition of Enamels.*

What we claim as our invention or production, and desire to secure by letters patent, is the enamel herein-before described, and its application to brick and iron.

JOHN G. DUNN.

ALFRED F. HOWES.

No. 9251.—*Improvement in Apparatus for heating Feed Water of Locomotives, &c.*

What, therefore, I claim as my invention, is to combine the vessel, H, with the deflector, R, the heater, W, and the chimney pipe, P, substantially as described, whereby such deflector shall not only form the bottom of the said vessel, H, but that the smoke and exhaust steam may be made to heat said vessel by impinging against the deflector as specified.

And I also claim the improvement of throwing the waste steam directly into the heater or vessel, H, and there partially or wholly condensing it, before it is passed into the tank of the tender; not meaning to claim the throwing of it into the tender from the blast pipe, and through a single pipe connecting the blast pipe and tender, but the combining the tender and the blast pipe, E, and the heater or vessel, H, by pipes, substantially in the manner represented in the drawing, whereby the advantages herein-before stated, as well as others, are obtained.

ISRAEL P. MAGOON.

No. 9252.—*Improvement in Whiffletree Hooks.*

What we claim as our invention, and desire to secure by letters patent, is the head turning upon the shaft to close the hook, the sliding catch to prevent its opening, and the spring within the head, acting upon them, the whole combined and operating substantially in the manner specified.

EDWIN A. PALMER.

ADOLPHUS J. SIMMONS.

No. 9253.—*Improvement in Air-tight Mail-bags.*

We are aware that hinged clasps or clamps have been used for drawing together, and keeping closed, the mouth of the bag; such, therefore, merely of themselves, we do not claim. But what we do claim as our invention, and desire to secure by letters patent, is forming the jaws of the clasp with a tongue and groove on their inner faces, for crimping in the elastic material of the bag, and causing it to act as packing, in effectually making air and water tight the mouth of the bag, as herein shown and set forth.

CHAS. A. ROBBINS.

HARVEY ALLEN.

No. 9254.—*Improvement in Blow-pipes for Dentists, &c.*

Now I do not claim the connecting a common blow-pipe with a bellows by means of either a flexible or inflexible tube; nor do I claim the invention of a lamp for blow-pipe purposes, which may be operated with alcohol, burning fluid or oil, or any other combustible substance; nor do I claim the use of a glass flame for blow-pipe purposes, instead of a spirit or other flame. But what I do claim as my invention, and desire to secure by letters patent, is—

First. The combination in one instrument of the flame of gas, or a lamp with a blow-pipe, so that both, operating together, may be held in one hand, and the flame applied on any spot, in any direction, and for any length of time, at the will of the operator.

Second. The arrangement of the thumb piece, E, or its equivalent, in combination with the flame of gas, or a lamp, and a blow-pipe, so that, while the instrument is held in one hand, a movement of the thumb will adjust the blow-pipe to the flame in such a way as to produce any desired variation in the flame, as above described and set forth.

I do not intend, by this claim, as I have intimated above, to restrict myself to the mode of construction herein or above described, but to reserve the right to vary the same as I may deem expedient, while I attain the same ends by means substantially the same.

JULIUS THOMPSON.

No. 9255.—*Improvement in preparing Stone in imitation of Marble.*

What I claim as my invention is the improvement in preparing the surface of the slate or absorbent stone, or mineral matter, for better receiving and retaining colors, and for its quicker and better induration, than by the ordinary process of baking oil or japan on it; the same consisting

in applying a drying oil or vehicle to it, as above set forth, in combination with baking it, and charring it, or with burning it thereon, essentially as above specified; the charring or burning the oil being the principle of my invention or discovery under the circumstances as stated.

And I also claim the improvement in applying the veining and ground colors to such indurated surface, or other surface, the same consisting in applying the graining colors first, and drying them on, in combination with subsequently covering the whole surface, together with such veining colors, with one or more coats of black or other colored japanning, and, after the same has been dried, grinding down japanning from the veining colors, and leaving it between them, so as to form a ground as stated.

HIRAM TUCKER.

No. 9256.—*Method of making Lamp-tops, Rivets, &c.*

What I claim as my invention, and desire to secure by letters patent, is the method of making lamp-tops, stoppers, rivets, and other similar articles, from a disk or plate of metal by bending it, and forming it substantially as described, so that the rim, I, I, is formed of two thicknesses of metal, and the centre and flange, M, M, of one thickness, as described.

LUTHER C. WHITE.

No. 9257.—*Improvement in Clothes Pins.*

I do not claim the invention of pins for securing clothes to the line; neither the invention of the coiled spring or lever; neither the combination of the parts of the same. But I do claim, and desire to secure by letters patent, the improvement of manufacturing clothes pins from wire of any suitable metal, with the aforesaid jaws attached, operated by a spring or lever, as being the most simple, cheap, effective, and durable of any kind in use.

SAMUEL ALDRICK.

No. 9258.—*Improvement in Connecting Joints for Washing Machines or other purposes.*

What we claim as our invention, and desire to secure by letters patent, is the construction of the joint (by which the connecting rod is attached to the spring board) by means of the knife edges, disposed in a right line, and confined by the straps and backing piece, substantially as herein set forth.

S. L. EGBERT.

S. W. GREEN.

No. 9259.—*Improvements in Printing Presses.*

Having thus fully described the construction and operation of my improvements, I will now point out the parts which I claim as my invention, and desire to secure by letters patent.

First. I claim a pair of nippers, so constructed as to draw the paper from the form by gripping the margin of the paper firmly between the

jaws of the said nippers, and at the same time holding the paper a little distance from the platen, as herein described and set forth.

Second. I claim the adjustable spring, *i*, and rod, *j*, for holding the nippers up from the platen, as herein described.

Third. I claim the fingers, *r*, for holding the edge of the sheet, in combination with the swing platen, as herein set forth.

CHARLES W. HAWKES.

No. 9260.—*Improvement in Lightning Rods.*

Having thus fully described the nature of my improvements in lightning rod points, what I claim therein as new, and desire to secure by letters patent, is—

First. The formation of the point of a lightning rod of successive sections, of different metals, each being of greater fusibility than the one below it, and having oblique junctions, so that an overcharge of the electric fluid simply melts off the upper section, without enlargement of the point below, either by its own partial fusion or by the lodgement of the upper metal upon it.

Second. Uniting the successive sections of an obliquely sectional lightning rod point by solder, or brazing, which is at each joint fusible, at a lower temperature than the section immediately above it, so that the melting of the point shall remove the entire uppermost section, and thus more certainly prevent the lodgement of any portion of the melted section upon the point thus exposed.

H. H. HOMAN.

No. 9261.—*Improvement in Smut Machines.*

What we claim as our invention, and desire to secure by letters patent, is making the blowing apparatus, with the drawer, *P*, *f*, *f*, *g*, and spout, *M*, movable, substantially as described, so as to allow of the wind chest, *J*, and pipe, *L*, being easily taken out, and turned in either direction, to admit of the machine being driven in whichever direction may be desired.

CHARLES KEELER.
JAMES KEELER.

No. 9262.—*Machinery employed in the Manufacture of Coiled-Wire Ferrules.*

I am aware that clamps, or holders, and cutting-dies, have been worked by cranks, and by cams. I therefore do not claim these, as such, as my invention; but what I do claim as my invention, and desire to secure by letters patent, is the method of cutting the wire at right angles to the axis of the coil, so that the ends of the ferrules will be perfectly true, without wasting any of the stock, by the use of the short mandrel, (*c*,) the clamp, or holder, (*h*,) and the cutting-die, (*F*,) when the machine is constructed, arranged, and made to operate substantially as herein described.

I also claim the combination of the method of cutting the coil (as described above) with the method of supporting the long coil, and of

feeding it, and of throwing off the piece when severed, when combined, arranged, and operated substantially as herein described.

WM. T. RICHARDS.

No. 9263.—*Improvement in Shuttle-Guides for Looms.*

I therefore claim as my invention—

First. The guide, A, B, or its equivalent, either with or without the flange, B, in combination with cloth-weaving looms, or as applied and used therewith, substantially in the manner and for the purpose of guiding the shuttle as specified.

Second. I claim the spring, H, and finger, I, or their equivalents, so arranged as to hold the guide, A, B, in its proper place, substantially as specified.

HORACE T. ROBBINS.

No. 9264.—*Improved Machine for manufacturing Porte Monnaies.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The manner, substantially as described, of putting the leather or other material in the frames, *g*, by forcing a sufficient quantity through the frame with a die, or plunger, B, at the back side, and then, by a larger die, F, pressing the part so forced through, and folding it over the inner edge of the frames.

Second. The form and construction of the clamp, E, E¹, which holds the frame, *g*, and the leather or material, to wit: the lower part, E, having an opening, C, just large enough to allow the die, B, to pass through, and the upper part, E¹, having an opening, *d*, large enough to allow the die, F, to pass through and fold the leather or material over the frame, and having a recess in its inner or bottom face around the said opening, *d*, to receive and hold the frame in it, so that the leather or material is held independently of the frame, and allowed to be drawn through the frame, substantially as herein described.

B. S. STEADMAN.

No. 9265.—*Improvement in Door Locks.*

The dividing plate, being well known, is public property, and therefore forms no part of my claim; neither do I claim any of the parts operated from the outside key-hole, as these may be of any usual form. But what I desire to secure by letters patent is the tumbler, *k*, enclosed by the dividing plate, *h*, to be operated on solely by the key when entered from the inner key-hole, in combination with the revolving check, or its equivalent, and the bolt, for the purposes and as described and shown.

WILLIAM MOORE.

No. 9266.—*Improvements in Forging Machines.*

I claim the sliding guide traversing upon the side-bars, as described, having a pin, pivot, or fulcrum, one end of which is attached to the sliding-guide, while the other end enters the end of the hammer, in which

it is so fitted as to allow the hammer to turn a short distance, when power is applied to it by means of the crank-cam or eccentric, and the connecting rods, H.

GEO. H. RICHARDS.

No. 9267.—*Improved Alarm Time Pieces for Lighting Lamps.*

What we claim as our invention, and desire to secure by letters patent, is the use of a revolving vertical section of a cylinder, (as G,) when combined with a spring, (as J, C,) to revolve it, when these are combined with the appropriate levers, (as E and F,) and connected with the alarm wheel (as B) of an alarm time-piece by an appropriate connecting rod, (as C,) for the purpose of lighting a lamp, in connexion with the alarm given by an alarm time-piece, when the whole is constructed, combined, and arranged substantially as herein described.

WM. H. ANDREWS.

RANDAL T. ANDREWS.

No. 9268.—*Improvement in Tuning Pegs for Guitars, &c.*

What I claim as my invention, and desire to secure by letters patent, is making the tuning-pegs of guitars, and other like stringed instruments, with the journal part of much greater diameter than the barrel on which the string is coiled, substantially as and for the purpose specified.

JAMES ASHBORN.

No. 9269.—*Improvement in Carving Machines.*

What I claim as my invention, and desire to secure by letters patent, is the folding frame, and wheels or pulleys, constructed substantially as above described, in *combination* with the double cross sliding ways and vertically sliding cylinder or tracer, for the purpose of tracing from patterns or other device, in the manner above specified.

CHARLES E. BACON.

No. 9270.—*Improvement in Coating Iron with Copper.*

Having thus described my invention, I do not claim the preparation of iron with zinc in the manner described; but I claim—

First. Coating cast, malleable, or wrought iron with copper, or any of the alloys of which copper forms a part, by employing a coating of zinc (or zinc and tin) to cover the iron as a positive medium to make the molten copper or its alloy adhere to the iron, in the manner substantially as described.

Second. I claim the employment of an infusible or partially infusible substance or substances, especially the fluoride of calcium, as a wiper and non-conductor, as herein set forth.

THEODORE G. BUCKLIN.

No. 9271.—*Improved Hand Drilling Machine.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the geared mandrel, which elongates to feed the drill, with the arm (g) that projects from the sleeve, (e), to steady the gearing, and the slot (g^1) in the stock, (A), to guide and steady the arm while traversing therein, to permit the drill to be advanced and withdrawn, as herein set forth.

REUBEN DANIELS.

No. 9272.—*Improvement in Horse Collars.*

We do not claim a rigid collar, nor a collar capable of expansion and contraction sidewise when the sides are connected by a third or intermediate part, or supported by a frame; but what we do claim as our invention, and desire to secure by letters patent, is the construction and arrangement of the two sides of the collar so that they fit together, and can be moved towards and from each other by a parallel motion, to diminish or enlarge the aperture for the horse's neck, and then be fastened by a set screw, or its equivalent, to form a rigid frame, substantially as herein described.

J. H. HALL.

JOHN LOWREY.

No. 9273.—*Improvement in Portable Wardrobes.*

Having thus described my improved wardrobe, I shall state my claim as follows: What I claim as my invention, and desire to have secured to me by letters patent, is a wardrobe susceptible of dismemberment, with the parts held together by means of the sliding bolts, b, b^1 , which fit into sockets, j, j^1 , and the notched studs, f, f^1 , which fit into the grooves, g, g^1 , the top piece preventing the back from slipping by the bolts, b^1, b^1 , and the sides being prevented from slipping by the projecting pieces, ll, ll , which press the braces, h, h^1 , forward and keep the studs, f^2, f^2 , pressed forward, as above described.

SETH L. HOBART.

No. 9274.—*Improvement in bevelling the edges of Skelps or Metallic Strips, &c.*

What I claim as my improvement, and desire to secure by letters patent, is arranging the rollers in the frame so as to receive a lateral movement, as may be desired—in other words, giving the rollers end play one over the other, thereby increasing or diminishing the distance between the bosses, (according to the width of the plate or strip,) and providing suitable means for retaining the same in place.

ROBERT KNIGHT.

No. 9275.—*Improvement in Rakes.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the slotted swinging arm with the slotted rake

handle and crank, E, in the manner as above described, for moving the cut grain from the platform.

AMZA B. LEWIS.

No. 9276.—*Improvement in Paper Cutting Machines.*

Having thus fully described the nature of my invention, what I claim as new therein, and desire to secure by letters patent, is the arrangement of the movable platform and sliding clamp, as described, in combination with the vibrating knife, as described.

JAS. E. MALLORY.

No. 9277.—*Improvement in Crayon Rubber.*

I do not claim as new the casting of particular forms of vulcanized rubber in moulds; but what I do claim as my invention, and desire to secure by letters patent, is the crayon rubber, made in the manner herein before substantially set forth, for the purpose of applying and blending the crayons in the bichromatic and other kindred styles of drawing.

D. F. POND.

No. 9278.—*Application of a Free Joint Tube in circumstances where it is exposed to external pressure.*

What I claim as my invention, and desire to secure by letters patent, is the application of the improved metal tube, made in the manner and for the purposes as herein-before described—that is to say, of a metal tube with a free joint (neither welded nor brazed) to boilers of steam engines, or other vessels requiring metal tubes, of such a character as to resist external pressure effectually.

RICHARD PROSSER.

No. 9279.—*Improvement in Galvanic Clocks.*

What I claim as my improvement or invention is the combination of the impulse spring, *s*, and the pallets, *f* and *b*, respectively, connected with the armature of the magnet and the pendulum, and made to operate together and to make the pendulum operate or impart impulse to it, substantially as described.

MOSES G. FARMER.

No. 9280.—*Improvement in Shoes and Gaiter Boots.*

What I claim as my invention is the improved gaiter boot or shoe as made with a lap piece separate from both the quarters, and extended up from the instep part of it, in combination with so applying button-holes and buttons, or their equivalents, to the said lap piece and the two quarters, as to enable the two quarters to be directly connected by the lap piece, all substantially as above specified.

JOSEPH BRACKETT.

No. 9281.—*Improved Jointed Bed-plate Saw Gummer.*

I do not claim the cylindrical cutter, C, separately, as that has been previously used; but having thus described the nature of my invention, and the manner in which it is operated, what I claim as new, and desire to secure by letters patent, is the employment or use of the cylindrical cutter, C; said cutter having a rotary and also a reciprocating rectilinear motion, in combination with the jointed bed-piece, B, in which the saw is placed; the cutter, C, having the above motions communicated to it in the manner as described or in any equivalent way, and the bed-piece being constructed substantially as shown and described; by which combination saws may be filed, gummed, and jointed in an expeditious and proper manner, as set forth.

HOSEA O. ELMER.

No. 9282.—*Improvement in Piano Forte actions.*

What I claim as my invention, and desire to have secured to me by letters patent, is jointing the "fly" of the jack to the stem of the same, so as to constitute a lever, the short arm of which has to move but little distance before it strikes against the regulating button, for the purpose of preventing any noise or "slapping," as above set forth.

GEO. HOWE.

No. 9283.—*Improvement in Throstle Spinning Machines.*

What I claim as my invention is the escapement wheel, O, its escapement lever, (composed of the arm, *h*, and pallets, *i*, *k*,) and stud, *y*, in combination with the reciprocating rotary mechanism, composed of the wheel, P, its concentric and endless grooves, row of pins, the pinion, *p*, and pendulous bar or arm, *r*; the whole being applied to give motion to the shaft, N, its pinion, the gear of the shaft, K, and the said shaft, K, in order to effect the movements of the spindle rail or rails, essentially as above specified.

CHARLES H. HUNT.

No. 9284.—*Improvement in Saw Mills.*

Having thus fully described my improvements in saw mills, what I claim therein as new, and desire to secure by letters patent, is the adjustable ways of the saw gate, when they are connected with each other, in such a manner that they can be simultaneously and uniformly varied and adjusted in their positions whilst the saw-gate is in motion, for the purpose of varying the amount of the cutting action of the saws, substantially as herein set forth.

I also claim the connecting and arranging of the feeding apparatus with the saw-gate and the adjustable ways thereof, in such a manner that the feeding motion communicated to the material operated upon will invariably be in perfect harmony with the cut of the saw; and also in such a manner as will enable me to ease the action of the saw when passing through knots, and at any time adapt it to the nature and the depth of the material operated upon, substantially as herein set forth.

HAZARD KNOWLES.

No. 9285.—*Improvement in Brick Kilns.*

Having thus fully described the construction and operation of my improved kiln in the several processes of burning brick, I would state that I do not claim constructing a stationary kiln of masonry. But what I do claim as my invention, and desire to secure by letters patent, is so arranging the several compartments of the kiln, each provided with a fireplace, in a circuit, and connecting them with each other and with the fireplaces and chimneys, by means of flues and dampers, that one compartment after another may be charged with fresh brick, and the brick be successively dried and heated by the waste heat, burned, cooled down, and removed, substantially in the manner herein fully set forth.

RICHARD E. SCHROEDER.

No. 9286.—*Improvement in Lath Machines.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the combination of the method of rotating the log or bolt from which the laths are to be cut, by means of the poppet wheels, J, J¹, arranged respectively on the shafts, E¹, E, which form a part of the mandrel at each end of the log, and the gear wheels, I, I¹, or their equivalents, moving with equal velocities, so as to prevent any wrenching or twisting of the log on its centres, and to hold it firmly up to the knives whilst being operated upon by them, and the method of clutching and releasing the log, by means of the dog, A, hollow bearing, C¹, for containing the clutch-head, G, and hollow shaft, E¹, for receiving the rod, F, which screws into said clutch, and by which the dog may be driven into the log, or the log released; the whole being arranged and operating substantially in the manner and for the purpose set forth.

H. C. SMITH.

No. 9287.—*Improvement in Sounding-Boards of Piano-Fortes, &c.*

What we claim as our invention, and desire to secure by letters patent, is making the sounding-board, A, of a piano-forte, or other stringed musical instrument, and arranging the strings and all appendages thereto in the form of a cylinder or part of a cylinder, or in any of the forms we have mentioned as considered to be equivalent; the said board having its ends secured between two disks, or heads, B and C, and having no other support except that derived from the said disks or heads.

ALFRED SPEER.
ERNEST MARX.No. 9288.—*Improved Machinery for Forming Sheet-Metal Tubes.*

I do not claim the manner of forming tubes by means of a rod and concave bed, irrespective of the manner of operating the rod, for they have been previously employed; the rod being operated or driven in the bed by means of a mallet or hammer operated by hand or by means of levers or cranks moved by gearing. What I claim, therefore, as my invention, and desire to secure by letters patent, is—

First. The method of mounting and operating the rod, E, within the concave bed, C, in the manner as shown and described, viz: the ends of the rod, E, being attached to the slide rods, E, H, said slide rods passing through the vertical guides, B, B¹, and having spiral springs, G, I, around them; the lower ends of the slide-rods being attached to levers, J, K, by operating which the rod is forced within the concave bed and the lower portion of the tube formed.

Second. I claim the hinged folders, O, O¹, attached to the wings, L, M, which are hung on pivots, N, N; said pivots being in line, longitudinally, with the centre of the rod, E, and operated in the manner and for the purpose of forming the upper or remaining portion of the tube, as herein set forth.

ORSON W. STOW.

No. 9289 — *Improvement in Registers for Omnibuses, and for other purposes.*

What I claim as my invention, and desire to secure by letters patent, is fitting toll passages with a registering step, combined with mechanism, in such manner that the aggregate number of full and fractional tolls due from passengers will be reduced to the denomination of full tolls, and registered, whatever the proportions may be in which the aggregate is composed, of fractional and full tolls, substantially as herein set forth.

J. Z. A. WAGNER.

No. 9290. — *Improvement in Bellows for Reed Instruments.*

What I claim as my invention, and desire to secure by letters patent, is the employment, in all reed musical instruments, of bellows, having two chambers, in one of which a vacuum is produced, and in the other air is compressed; the said chambers being on opposite sides of the reeds, and communicating with each other through the reeds, so that when one forces air through them, the other, by the vacuum, draws it through at the same time. This I claim without reference to the precise construction of the bellows or the mode of operating them.

ISAAC T. PACKARD.

No. 9291. — *Improvement in Electro-Magnetic Engines.*

What I claim as my invention, and desire to secure by letters patent, is the application of a spring or springs, or their mechanical equivalent, used as recipients of the excess of power in the closing of the electro-magnets and armature, to be imparted again to the next, as described and set forth.

JOHN S. GUSTIN.

No. 9292. — *Improvement in Machines for Polishing Leather.*

What I claim as my invention, and desire to secure by letters patent, is connecting or fastening the stand or stands that hold the polishers or burnishers to a belt, so as to traverse them in ways or grooves, or under a plane, substantially as described.

J. MORTON POOLE.

No. 9293.—*Improvement in Grain Separators.*

I am aware that revolving screens, separately considered, are not new; also, that the conveyor, or endless apron, has been employed, in combination with a thrashing cylinder, vibrating shoe, and fan; such, therefore, of themselves, I do not claim. But what I do claim as new, and desire to secure by letters patent, is the use of a hollow revolving cylinder, so constructed and so moved as herein fully set forth, for the purposes of a straw carrier, by which the advantages above enumerated and explained are obtained.

JACOB BERGEY.

No. 9294.—*Improved Vise.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the sliding-bar, with screw attached thereto, with reference to the fast jaw, A, and the moving jaw, B, when said sliding bar is provided with a series of holes, or their equivalents, and said jaw, B, is provided with a pin, or its equivalents, whereby B can be set at varying distances with respect to A, and that distance afterwards regulated by the screw.

W. BUTLER.

No. 9295.—*Improvement in Hand Printing Presses.*

Having thus described my improvements in printing presses, what I claim as new, and desire to secure by letters patent, is—

First. The arrangement, substantially as described, in a hand power-press, of guide-bars resting upon adjusting points, or hinged at their rear ends, and guided at their front ends to a vertical vibration, concentric with said points or hinge, so that the entire bed, guide bars, and their appendages, shall move bodily upward upon giving the impression, and return by their own weight to the state of rest, whether operated by a shaft, (*j*,) extending below the bed, and working a toggle joint beneath the bed or bars, as described, or in any equivalent way.

Second. I claim, in connexion with the before-described arrangement, the ascending grade at the fore end of the guide-bars, for the purpose of limiting the range of the toggle at the period of giving the impression.

CHAS. FOSTER.

No. 9296.—*Improvement in Seed Planters.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the employment or use of the adjustable tire, or tires, for the purpose of varying the diameter of the wheel, A, to allow the seed to be deposited the required distance apart.

D. HALDEMAN.

No. 9297.—*Improvement in Rotary Stove Grates.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The combination of the rotary movement of the bottom grate with the vertical annular grating, or its equivalent, surrounding the same, for the purposes substantially as herein set forth.

Second. I claim the rotary movement of the bottom grate with the controllable tilting movement of the same, substantially as herein described.

Third. I claim the combination and arrangement of the several parts whereby the aforesaid rotary and tilting movements of the bottom grate are effected, substantially as herein described.

ALEXANDER HARRISON.

No. 9298.—*Improvement in Seed Planters.*

What I claim as my invention, and desire to secure by letters patent, is the corn planter sieve and its appendages, for the purpose of sifting and depositing the fine earth upon the grain, and throwing off stones and such matter as would obstruct the young sprout in coming through the ground, substantially as described and illustrated herein.

ROBERT M. JACKSON.

No. 9299.—*Improved Spark Arrester.*

Having thus described the nature of our invention, and the manner in which it is operated, what we claim as new, and desire to secure by letters patent, is the revolving screen, F, in combination with the chamber, E; the lower part of said chamber communicating with the smoke-pipe, A, at a point below the tops of the exhaust tubes, C, C; by which arrangement a downward draught is created within the chamber, E, and the cinders drawn from the screen, F, as it revolves, thus preventing the clogging of the screen, as set forth.

VOLNEY P. KIMBALL.
BRUCE KIMBALL.

No. 9300.—*Improvement in Bee Hives.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The use of a shallow chamber, substantially as described, in combination with a perforated cover, for enlarging or diminishing at will the size and number of the spare honey receptacles.

Second. The use of the movable frames, A, A, fig. 4, or their equivalents, substantially as described; also their use in combination with the shallow chamber, with or without my arrangement for spare honey receptacles.

Third. A divider, substantially as described, in combination with a movable cover, allowing the divider to be inserted from above between the ranges of comb.

Fourth. The use of the double glass sides in a single frame, substantially as and for the purposes set forth.

Fifth. The construction of the trap for excluding moths and catching worms, so arranged as to increase or diminish at will the size of the entrance for bees, substantially in the manner and for the purposes set forth.

L. L. LANGSTROTH.

No. 9301.—*Improvement in Upright Piano Fortes.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Extending the upper part of the metallic plate, or cap, I, at the part where the shorter of the strings, J, J, are placed, over the sounding board, H, and supporting it by blocks, or supports, c, c, which pass through the sounding board to the frame timbers, substantially as set forth, whereby the higher end of the bridge, K, or that part on which the strings of the higher notes rest, is allowed to be brought nearer to the centre of the sounding board, to get a better vibration.

Second. The combination, in the manner substantially as described, of the cushioned block, p, and the adjustable button, o, on the upright wire, h, attached to the key, for the purpose of preventing the entire descent of the hammer, after striking, until the key is left free.

R. E. LETTON.

No. 9302.—*Improvement in Machines for Wringing Clothes.*

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is keeping the ends of the clothes sack distended during the progress of wringing, to equalize the twisting of the same at all parts by means of the elliptical spring leaves and elastic wings, substantially as described.

JOS. P. MARTIN.

No. 9303.—*Improved Apparatus for Puddling Iron, etc.*

Having thus described my automatic puddling apparatus, what I claim as new, and desire to secure by letters patent, is—

First. The combination of an automatic rable with a revolving or moving basin, arranged and operated substantially as herein set forth, or with a stationary basin, or bottom, whereby much manual labor is dispensed with for stirring the iron in the process of puddling.

Second. The arrangement of the hollow shaft, D, cooler, C, and moving basin in such manner that a stream of water can be kept circulating round the bottom and sides of the latter to prevent it from being overheated, substantially as herein described.

Third. The combination of the crank and swinging guides, or their equivalents, which enables the operator to make the rable stir over different parts of the bottom and at different angles to the side of the furnace, and also to remove it out of the way when necessary.

JAMES McCARTY.

No. 9304.—*Improvement in Piano Fortes.*

What we claim as our invention, and desire to secure by letters patent, is—

First. The combination of the wind chest, F, and flute, or other similar wind pipes, E⁵, E⁶, E⁷, E⁸, with the horizontal piano forte action, in the manner substantially as set forth, to wit: the pipes being placed horizontally at the bottom of the case below the piano forte action, and the wind chest placed below the front ends of the piano forte keys, in such a manner as to allow the valves to be operated directly by the said keys.

Second. The manner of opening the valves of the flute, or wind pipes, to play an octave lower than the piano, either at the same time that they are being played at the same pitch as the piano, or not, by means of the series of levers, g, g¹, g, g¹, arranged and operated upon by the blocks, S, S¹, upon the vertical pins, i, i¹, i, i¹, under the piano key.

JAMES McDONALD.

JOHN McDONALD.

No. 9305.—*Improvement in Printing Presses.*

Having thus fully described my rotary cone printing press, what I claim as new, and desire to secure by letters patent, is not the use of conical impressing cylinders, but the peculiar arrangement and combination of conical impressing cylinders, one or more in number, each provided with a set of conical distributing inking rollers, adapted thereto, and with a rotating wheel or disk, substantially as described.

I also claim, in combination with the conical impressing cylinders, the position and arrangement of the clamp, consisting of the metal plate, K, spring, N, and arm or lever, I, which retains the paper at the required angle to receive the impression, and releases the same when the impression is taken, substantially as set forth.

JOHN G. NICOLAY.

No. 9306.—*Improvement in Expanding Window Sashes.*

What I claim as my invention, and desire to secure by letters patent, is the sash constructed in two pieces, so that both, when brought together, shall be narrower than the distance between the bottoms of the grooves in the jambs of the frame in which the sash is designed to be placed, by at least the thickness of one of the stop-strips of the frame, and connecting these two pieces of the sash in such manner that one will slide past or into the other, so that the sash can be contracted or expanded, as may be required, to make it fit different window frames, and to adapt itself to the varying width of the same frame, and also to admit of its being put into and taken out of the frame without removing the stop strips therefrom; the two parts of the sash thus moving towards and from each other having springs, or the equivalent thereof, adapted to them, so as to give them a constant tendency to diverge from each other, that the sash may at all times expand promptly and fill the frame, to hold itself firmly in place, substantially as herein described.

MIGHILL NUTTING

No. 9307.—*Improvement in Milling Machines.*

What I claim as my invention, and desire to secure by letters patent, is the construction and combination of the vertically moving cutter stock, or poppet head, with the driving pulleys, &c, mounted on a swinging frame, hung with a pivot hinge at the bottom, the connexion between the two being effected by radius rods, in the manner and for the purpose substantially as herein set forth and described.

WM. H. ROBERTSON.

No. 9308.—*Improvement in method of Priming Fire Arms.*

What I claim as my invention, and desire to secure by letters patent, is the priming of fire arms by throwing a pellet of percussion or priming material over the nipple at the time the cock is descending thereon, so that the priming shall be struck down in its flight between the cock and the nipple, and exploded.

CHRISTIAN SHARPS.

No. 9309.—*Improvement in Window Frames.*

What I claim as my improvement, and which I desire to secure by letters patent, is the pulley style, constructed of the pieces, L, D, M, as set forth, in combination with the springs, E, E, by which means I am enabled to make use of solid or immovable bead strips, *m*, and bands, K, I, and to remove the sash at pleasure from the frame, in the manner substantially as described.

HENRY CLAY SMITH.

No. 9310.—*Improvement in Time Pieces.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Hanging the balance of a clock, or time-piece, on a spring or strip of metal, E, which is fixed or prevented from turning at both of its ends, but capable of twisting between the ends, substantially as and for the purpose herein described.

Second. Making one part of the fork or crutch wire, K, flat and thin, substantially as shown at *k*, or otherwise constructing it to allow it to bend or move in a similar manner, and connecting the said fork or crutch wire with the balance in any manner, as shown at *i*, which causes it to give its impulse in the same direction as the motion of the balance; the said bending or motion of the fork or crutch being for the purpose of allowing it to transmit the impulse in the above direction.

SILAS B. TERRY.

No. 9311.—*Improvement in Churns.*

Having thus described our apparatus and its operation, what we claim as our improvement and invention, and desire to secure by letters patent, is the combination of the tub, E, including the appendages described, with the frame, A, A, and stands, B, B, or any other convenient frame—

work adapted to the use of the tub, in a vertical and a horizontal position, but in manner and for the purposes substantially as herein set forth and described.

LUCIAN A. BROWN.
HUBBARD BIGELOW.

No. 9312.—*Improved Apparatus for Heating Feed Water of Steam Boilers.*

What we claim as our invention, and desire to secure by letters patent, is the arrangement of a heater for the feed water of steam boilers, with respect to the chimney, smoke box, and the blast pipes of the escape steam, substantially as herein described, so that the heated smoke and gases from the smoke-box, and the exhaust steam from the cylinder, shall pass separately through the heater in distinct tubes or channels, in such manner that they cannot mix until both have passed the heater, as herein set forth.

M. W. BALDWIN.
DAVID CLARK.

No 9313.—*Improvement in Mill Stones.*

I am aware that holes or apertures in upper and under mill stones have been some time in use, and I do not claim simply the making of holes or apertures in mill stones as my invention; but I do claim the making in under mill-stones of holes or apertures, covered with wire-gauze cloth, perforated metal plates, or any other substance that will allow part of the meal to pass through, after it is sufficiently ground, in combination with holes or apertures in upper mill-stones, containing sweepers, brushes, or rubbers, for the purpose of sweeping, rubbing, or brushing the meal over or through the wire gauze cloth, perforated metal plates, or other substances, without confining myself to the exact detail described in the above specification.

THOMAS BARNETT.

No. 9314.—*Improvement in Gang Ploughs.*

Having thus fully described the nature of my invention, I will now state what I claim as new, and desire to secure by letters patent. I claim the manner herein described of constructing the mould boards, D, D, D, D, D, D, and combining them with the blade, E, in the manner substantially as herein specified.

CHARLES BISHOP.

No. 9315.—*Improvement in Sugar Boiling Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The arrangement and combination of the simmering vessel, *c*, 1, with the ball cock and the scumming trough, *h*, substantially as described in the first part of the foregoing specification; and I claim this arrangement and combination, whether alone or in further combination

with a partial covering of the bottom of the simmering vessel, or the introduction of the steam worm, as there described.

Second. The agitator, O, arranged and operating in the manner and for the purposes substantially as described in the second and fourth part of the foregoing specification.

WM. H. CLEMENT.

No. 9316.—*Improvement in Scumming Apparatus for Sugar Pans.*

I claim as my invention, and desire to secure by letters patent, the application in the manufacture of sugar of rotating paddles or leaves, for skimming or taking off the scum and gummy matters from the surface of the liquor.

WM. H. CLEMENT.

No. 9317.—*Improvement in Distilling Apparatus.*

What I claim as my invention, and desire to secure to myself by letters patent of the United States, is—

First. The combination and arrangement of the boilers, A and P, connected by the pipes, B and L, with the column, Z, which enables me to work continually and without interruption by distilling the contents of one boiler while the other boiler is being filled, and thus distilling the contents of one boiler immediately after the other, as seen in the description of the work in the former part of this specification.

Second. The combination and arrangement of the worm, V, situated between the two boilers, A and P, and of the pipes, U and X, which connect the boilers, A and P, with the worm, V, enabling me to test and ascertain the nature of the liquid contained in the boiler under operation, and to ascertain when the contents of that boiler are distilled.

CHS. DELESCIUZE.

No. 9318.—*Improvement in Illuminating Gas Apparatus.*

What I claim as my invention, and desire to secure by letters patent, is the return-pipe, D, in combination with the retort, substantially as set forth.

I claim, in combination with said pipe, the false bottom and lining as described.

I claim the arrangement of the decomposing chamber, 6, in combination with the return-pipe in the vertical retort.

I claim the employment of the series of decomposing trays, under the arrangement in the vertical retort, substantially as described, in combination with the central pipe.

I claim refrigerating the gas by air, substantially in the manner described.

ROBERT FOULIS.

No. 9319.—*Improvement in mode of making India Rubber Bat Cloth.*

What I claim as my invention, and desire to secure by letters patent, is passing the bat or fleece of cotton, flax, silk, or other fibrous substance,

together with dissolved or softened caoutchouc, gutta-percha, or other vulcanizable gum, or the compounds or preparations thereof, between calendering rollers, with an elastic substance interposed between the bat or fleece and one of the rollers, as described, or between the glazed apron and one of the rollers, substantially as described.

CHAS. GOODYEAR.

No. 9320.—*Improvement in Electro-Magnetic Engines.*

What I claim as my invention, and desire to secure by letters patent, is supporting the principal part of the weight of the armatures of the electro-magnets, mounted upon sliding guides, or their equivalents, upon the reciprocating frame, as described, by means of springs, or their equivalents, attached to said frame, so as to preserve the balance of weight in the moving parts, substantially as set forth.

JOHN S. GUSTIN.

No. 9321.—*Improvement in Safety Valves.*

What I claim as my invention, and which I wish to secure by letters patent, is the introduction of the cock in the connecting pipe, E, by which the resistance to the pressure is taken off, and at which the steam will be allowed to escape.

ALFRED GUTHRIE.

No. 9322.—*Improvement in Double-Seaming Machines.*

Having thus fully described the construction and operation of my improved machine, what I desire to secure by letters patent is the mandrel, with heads removable at pleasure, in combination with two or more pressure rollers operating with the same, and with a mallet acting simultaneously with said mandrel and pressure rollers.

I also claim the adjustable steadying rollers, (G,) or their equivalent, arranged with reference to the mandrel, and acting substantially in the manner and for the purpose herein set forth.

WALTER HAMILTON.

No. 9323.—*Improvement in Hominy Mills.*

Having thus fully described the nature of my improved machinery for making hominy and samp, what I claim therein as new, and desire to secure by letters patent, is the combination of the beating cylinder, arranged and constructed as set forth, with the adjustable discharging apertures, (*f, g,*) by means of which the hulls and eyes are separated from the grain, and the latter is retained within the range of the beaters for a shorter or longer period, according to the grade or size of hominy or samp which is desired.

JAMES HUGHES.

No. 9324.—*Improvement in Presses for bundling Flocculent and other substances.*

Having thus described my improved press, what I claim as new therein, and desire to secure by letters patent, is the combination of the pressing box, made with openings in its sides, with the platen and bed turning on swivels, and formed with channels, so arranged as to admit of the passage of the needle and cord through the pressing box for the purpose of singly and doubly binding fleeces of wool or other substances while under pressure.

DANIEL KELLOGG.

No. 9325.—*Improvement in Gas Regulators.*

Having thus fully described my improved gas regulator, what I claim therein as new, and desire to secure by letters patent, is producing a uniform pressure of gas in the branch pipe which supplies the burners, by means of the inverted cup, C, the vibratory lever, *f*, and the induction valve, *d*, arranged and operating within the chamber, A, of the branch pipe, substantially as herein represented and described.

WALTER KIDDER.

No. 9326.—*Improvement in Gas Regulators.*

Having thus fully described my improved gas economizing regulator, what I claim therein as new, and desire to secure by letters patent, is producing a uniform pressure of gas in the branch pipe which supplies the burners—which may not be varied by the number of burners supplied, nor by the variations of pressure in the main—by means of the counterpoising double inverted cups, E, F, the vibratory lever, *g*, and the induction valve, *d*, so arranged with reference to the main and the branch pipe, that one of the said inverted cups will be acted upon by the gas in the main, and the other by the gas in the branch pipe, as herein represented and described.

WALTER KIDDER.

No. 9327.—*Improvement in Gas Regulators.*

Having thus fully described my improved gas economizer, what I claim therein as new, and desire to secure by letters patent, is the producing at all time a proper and uniform pressure of gas in the branch pipe which supplies the burners—which will not be essentially varied by the number of burners supplied, nor by the variations of pressure in the main—by means of the induction valve, *m*, the vibratory lever, *c*, and the counterpoising inverted cup, B, combined, arranged, and operating within the chamber, C, of the main, substantially as herein represented and described.

WALTER KIDDER.

No. 9328.—*Improvement in Harness Saddle Trees.*

Having thus described the nature of our improvements in harness saddle-trees, what we claim therein as new, and desire to secure by letters

patent, is the crupper loop, (*e*), having a shank, (*f*), which, being inserted through the cantle and into the pommel, is secured to the latter by the pad hook in the manner described.

THOMAS MARDOCK.
WM. C. KELLAR.

No. 9329.—*Improvement in the Apparatus for transporting Trains on inclined planes of Railroads.*

I do not claim as my invention dividing the axles of the car, and providing the inner ends of the two parts with independent journals, as this has before been done; neither do I claim the use of an auxiliary track running down into a pit. But what I claim as my invention, and desire to secure by letters patent, is making the axles of the safety-car in two parts, the inner end of each part being provided with an independent journal, constructed and operated as described, when this is combined with the auxiliary wheels, and auxiliary converging track and pit, substantially in the manner and for the purpose specified.

SAM'L McELFATRICK.

No. 9330.—*Improvement in Grinding Mills.*

What I claim as my invention, and desire to secure by letters patent, is the pointed projections, *b*, on the front edges of the teeth of the cylinder, *E*, when used in combination with the teeth, *c*, *c*, in the concave formed with concavities in their front edges, substantially in the manner and for the purpose herein set forth.

OLDIN NICHOLS.

No. 9331.—*Improvement in Expanding Window Sashes.*

What I claim as my invention, and desire to secure by letters patent, is the method of varying the pressure of the edges of the expanding sash against the jambs of the window frame, by means of the combination of the adjusting screws and springs with the set screws, or the equivalent thereof, for limiting the extent of the expansion of the sash, substantially as herein set forth.

MIGHILL NUTTING.

No. 9332.—*Improvement in Plough-Fastening Devices.*

I do not claim, exclusively of itself, hooking the land side to the mould board. But what I do claim as new and useful, and desire to secure by letters patent, is holding the share, *E*, to its place by a tightening wedge, *F*, having a lip, *m*, for lap or bite on the share, in conjunction with the headed or lipped studs, *i*, *i*, for further securing the same.

JAMES ROBB.

No. 9333.—*Improvement in Seed Planters.*

I do not claim, exclusively of itself, giving to the drill-tooth the curvilinear movement specified, as such is old. But what I do claim as my invention, and desire to secure by letters patent, is—

First. Causing the point of the drill-tooth, when raised out of the ground, to slope backward, by the arrangement of the drag bar attachment, the friction pulley, and the curve of the upper part of the drill-tooth, to avoid breaking the tooth, as herein described.

Second. I claim the combined device of endless screw and curved rack and pinion, for producing the result herein specified.

JAMES ROBB.

No. 9334.—*Improvement in Burners for Spirit Gas Lamps.*

I do not claim the reservoir, burner-tube, or arrangement of the wick. What I claim as my invention, and desire to secure by letters patent, is the combination of the lower chamber or chambers, F' and G, with the upper chamber, E, for the purpose specified, viz: the lower chamber or chambers answering the purpose of a heater to volatilize or turn into gas the fluid in the chamber, E, the flame being regulated as above described, and the whole arrangement being substantially as above set forth, without restricting myself by this claim to the precise form of the burner described.

RUFUS W. SARGENT.

No. 9335.—*Improvement in Packing Water-Wheels.*

Having thus described my improved water-wheel, what I claim as new therein, and desire to secure by letters patent, is the arrangement of the packing between the edges of the chamber or case and the wheels, in such manner that the packing on the lower portion of the chamber is adjustable from the interior, while the packing round the upper portion of the chamber is set up from the outside of the said chamber, substantially as specified, so that the whole of the packing is on the upper side, and none of it under the case, and all capable of being set up or adjusted without the necessity of getting under the case.

ERASMUS SMITH.

No. 9336.—*Improvement in Governors.*

Having thus described my invention and improvement in governors, what I claim as new, and desire to secure by letters patent, is the combination of the winding cords or chains, G, retarders or disks, J, hub, H, and spindle, E, arranged and operating in the manner and for the purpose substantially as herein set forth.

I also claim operating the governor-valve of steam and other engines by the twisting and untwisting of a flexible cord or chain, or equivalent thereto, attached to revolving retarders and to the driving pulley placed above the same, and detached from the spindle.

I likewise claim constructing the clasp, O, with shoulders upon each part, which fit against corresponding shoulders upon its opposite part, and prevent the opening of the clasp, when they are united by the screw, t, substantially as set forth.

JOHN TREMPER.

No. 9337.—*Improvement in Glass Buttons.*

What I claim as my invention is the inserting of figures of uniform or variegated colors upon the inside of glass centred buttons, substantially in the mode above described.

ARAD W. WELTON.

No. 9338.—*Improvement in Sewing Machines.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is, in combination with the needle bars, J, the spring-holders, K, and adjustable guides, *b*, through which said bars pass, for the purpose of regulating the length of the stitch, substantially as herein described.

I also claim, in combination with the apparatus for regulating the length of the stitch, the weight, or its equivalent, for drawing the cloth forward as it is alternately released from the needles, by which means the feed motion is regulated, and made dependent on the length of the stitch, substantially as described.

OTIS AVERY.

No. 9339.—*Improvement in Spreading Lime and Manure.*

What I claim as new and useful, and desire to secure by letters patent, is so constructing the pulverizing and fertilizing apparatus as to effect the several functions of pulverizing and distributing manures of various kinds at will, by so arranging the roller, D, that it can be raised or depressed in the discharging opening of the bottom of the hopper to any required level, so as to discharge a larger or smaller quantity of material previously brought to the desired degree of fineness in the hopper, and, at the same time, to act as a valve to close more or less tightly the bottom of the hopper; the same roller likewise serving as a distributor of seed in sowing broad-cast without any alteration of the machine, substantially as herein set forth.

LEWIS COOPER.

No. 9340.—*Improvement in Tools for cutting Pegs out of Boot Soles.*

Having thus fully described the nature of my invention, I will state what I claim as new, and desire to secure by letters patent. I claim the adjustable float, or cutter, C, D, E, connected to a shank, B, by means of the pin, or pivot, *b*, which turns loosely in the bearing, or standard, *a*, so as to permit the float to adjust itself to the proper positions to cut the pegs from the heel to the toe of the boot, in the manner herein set forth.

D. D. ALLEN.

No. 9341.—*Improvement in Grain Separators.*

What I claim as my invention, and desire to secure by letters patent, is the method herein described of regulating the blast of winnowing machines by means of a flap on the fan-case, arranged and adjusted substantially as herein set forth.

I also claim the reciprocating toothed bars, G, with the trough, A, whose bottom is divided into three portions, the lowermost being tight, and acting merely as a conveyor, the middle one acting both as a conveyor and screen to separate the wheat from the straw and allow it to pass into the winnower, and the upper or third portion acting as a conveyor for the straw, and a coarse screen to separate therefrom the heads of unthrashed grain that would not pass through the lower screen; the teeth of the reciprocating bars moving the straw regularly along the trough, and working or shaking the grain and heads so effectually through the screens that none is left to pass off with the straw when it is discharged from the upper end of the trough.

PETER GEISER.

No. 9342.—*Improvement in Printing Presses.*

What I claim as my invention, and which I desire to secure by letters patent, is the combination of a reciprocating type bed with an impression cylinder which has the half rotary (or reciprocating rotary) movement, and also a movement to and from the type bed, as herein set forth and described.

LUCIUS T. GUERNSEY.

No. 9343.—*Improvement in Seed Planters.*

Having thus described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the rail, (*h*,) with the rod, or rods, (*g*,) connecting it with the hopper, (*a*,) the said rods occupying traversing collars, (*i*,) with tightening screws, (*k*,) by means of which the relative distances of the axle and the feed-shaft are adjusted to suit different arrangements of gearing, according to the rate of feed desired.

EDSON HART.

No. 9344.—*Improvement in Apparatus for elevating and discharging Bilge Water, etc.*

I am aware that rocker pumps have been constructed to be operated by hand power, but in these no adequate provision has been made for receiving and retaining the water as it is raised up; besides, their action is limited to a continuous rapid propelling power; whilst by my arrangement any varying inclination of the vessel from a horizontal line, however slow, puts the apparatus in operation, and, as heretofore constructed, could not, without encumbering the hold of the vessel, be placed therein. I do not, therefore, lay claim to any such pumps; but what I do claim herein as new, and desire to secure by letters patent, is, in combination with a series or system of tanks and tubes, or their equivalents, the ventilating tubes, D, substantially as described, for the purpose of elevating and discharging water from the holds of vessels; the whole being operated or worked by the motion of the vessel, as set forth.

NEHEMIAH HODGE.

No. 9345.—*Improvement in Water Wheels.*

I claim the application of an adjustable lip sliding on the inner face of the buckets of a turbine-wheel, to regulate the openings between the outer edges of the buckets, and thereby the flow of water from the wheel, in manner and form substantially as set forth in the above specification, and thus adapting the lines of the turbine to the head of water and amount of work to be done, however varying.

IRA JAGGER.

No. 9346.—*Improvement in making Soda Ash and Carbonates of Soda.*

Having thus fully described my invention, and the means by which the same may be reduced to practice, what I claim therein as new, and desire to secure by letters patent, is—

First. The process of making soda ash by heating the mixture of sulphate of soda and carbonaceous matters, without the use of lime or any other foreign matters, as preparatory to converting the same into other products, substantially as described.

Second. The process of treating the aqueous solution of the above heated products by carbonic acid, then boiling to dryness, to form a monohydrated carbonate of soda, to be treated again in the dry state by carbonic acid, to form bicarbonate of soda, as set forth in the specification.

HENRY PEMBERTON.

No. 9347.—*Improvement in Beds'eads.*

What I claim as my invention, and desire to secure by letters patent, is the swinging foot-board to serve the purpose of a clasp for securing the bed clothes, it being held down by a ratchet and pawl, or otherwise.

D. W. SMEAD.

No. 9348.—*Sash Stopper and Fastener.*

What I claim as my invention, and desire to secure by letters patent, is the construction of a window or sash stopper, operated by a winding spiral spring; the whole arranged and combined substantially as herein.

JAMES D. SMITH.

No. 9349.—*Improved Life-Preserving Seat.*

I claim the said improved life-preserving seat as made of a combination of the seat, A, the head, or block, B, the air-tight vessel, D, and the connecting rods, or grasping bars, C, applied together, and used substantially in manner and for the purpose as specified.

G. W. TEWKSBURY.

No. 9350.—*Improved Burglar-Proof Plates for Doors, Safe-Walls, Vaults, etc.*

What I claim as new and of my invention, and desire to secure by letters patent, is a method of making burglar-proof plates, doors, and

chests of iron, which, in the process of being cast into the form required for such plates, doors, and chests, surrounds or imbeds malleable iron rods, or bars, or their equivalents, arranged substantially as described and shown by the specification and drawings herewith accompanied, or in an equivalent manner.

I do not claim in said plates, doors, and chests the casting in of straight rods or bars of malleable iron, or their equivalents, imbedded parallel with each other in only one general direction.

LINUS YALE, JR.

No. 9351.—*Improvement in the mode of forming Crucibles and other articles of Earthen Ware.*

What I claim, and desire to secure by letters patent, is the cutter, *k* and *l*, on the stock, *i*, in combination with the mould, *e*, to either or both of which a rotary motion is given, so as to remove the surplus material and shape the crucible, as described and shown.

JOHN AKRILL.

No. 9352.—*Improvement in Boot Crimps.*

I do not claim as my invention the form of the brake, or of the clamps. But what I do claim as my improvement on crimping machines, is arranging a spring lever, *K*, upon the back of the crimping lever, *H*, substantially in the manner and for the purpose herein set forth.

LUMAN BARRETT.

No. 9353.—*Improvement in Bit or Drill Stock.*

What I claim as my invention is the improvement of combining with the bell crank, *A*, and handle, *B*, of the bit stock the rotary bit holder or shaft, *E*, the shaft, *K*, the pulleys, *M*, *L*, and endless band, *N*, (or two gears, as stated,) and the pulleys, *G*, *I*, and band, *H*, or gears, all substantially as described, and for the purpose of accelerating the rotary motion of the drill beyond that of the bell crank when the instrument is used as stated.

DEXTER H. CHAMBERLAIN.

No. 9354.—*Improvement in Gilding Daguerreotypes.*

I claim and desire to secure letters patent for my mode of gilding daguerreotype plates, substantially as described—that is to say, by the employment of the electric current, and of hot solutions of the cyanides of gold, previously boiled; and I claim the kind of zinc circle, or tray, designated by the figure 6.

CHARLES L'HOMDIEU.

No. 9355.—*Improvement in a Machine for making Bags of Paper.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Giving the proper form to the piece of paper, or material from which the bag is to be made, by means of the shears, *e* and *f*, which cut

on the edges of, or on edges attached to, the stationary table or inclined plane, J, on which the paper is delivered, and cut out a rectangular piece, as shown in figures 6 and 8, from that part which is to form one side of the bag so as to leave a lapping piece on the part which is to form the other side of the bag, as herein substantially set forth.

Second. The pasters, 13 and 39, in combination substantially as described with the feeders, 15 and 60, which revolve or pass through the paste and supply them with a proper quantity for pasting each lap.

Third. The combination of the creasers, 22 and 44, and the lappers, 19 and 38, with the intermittingly moving feed-rollers, W, Z, and aprons, U, Y, in the manner substantially as described; the said creasers and lappers being brought successively into operation on the bags during the intermissions in the motion of the feed-rollers, as set forth.

FRANCIS WOLLE.

No. 9356.—*Improvement in Machinery for Combing Wool.*

Having thus set forth our invention, we would have it understood that what we claim is the combination, (viz: the plate, c^1 , the endless belt, c , and the rotary spring bar or bars, b, b , or equivalent therefor,) operating as described, by which we draw the fibres from the gill combs and carry them forwards to the revolving brush; the whole constructed and made to operate substantially as specified.

And we also claim the peculiar manner in which the revolving brush that takes the wool from the nipping apparatus and conveys it to and lays it upon a circular band or belt of upright teeth, a , is constructed and operated, the same consisting in making the said brush in sections, (g^4, g^4, g^4 ,) and combining therewith mechanism by which not only a range of these sections can be thrown into a straight line with each other, but another and opposite range can be thrown into a curved or bent line, as herein-before described; the said mechanism for effecting the movements of the sections of the ranges being as herein before explained, and as represented in figure 4 of the drawings.

S. C. LISTER.

G. E. DONISTHORPE.

No. 9357.—*Improvement in Watch Keys.*

I claim the key, e , retained in a countersink in the back plate, c , of the watch by a spring or similar means, as herein set forth.

CHAS. E. JACOT.

No. 9358.—*Improvement in Hot-Air Furnaces.*

What I claim as my invention is as follows:

I claim the improved mode of making and supporting the grate, viz: by the combination of a single journal, a socket piece, and a crank-key shaft, as applied to the furnace and grate, and made to operate substantially as specified.

I also claim the peculiar combination and arrangement of the horizontal flues, P, R, the vertical flues, Q, Q, Q, and the flue space, K, sur-

rounding the chamber of combustion ; the whole being essentially as above specified.

AUGUSTUS M. RICE.

No. 9359.—*Improvement in Cooking Stoves.*

What I claim as new, and desire to secure by letters patent, is giving the arched fire plate, 6, 6, great elevation above the level of the oven top on which its upper edge rests, and giving great capacity thereby to the air-chamber formed by the arched fire-plate and the oven plates ; the under side of the arched fire-plate being furnished with ribs, 7, 7, which divide this air-chamber into flues transverse the stove, so that the full force of the fire draught is thrown upon the boiler openings and from the top plate of the oven, thereby protecting it from a surcharge of heat, and so that, in concert with the flues around the ovens as described, the air must pass from the openings in the side-plates to the centre, and thence back to the sides of the stove to the flues leading to the front of the stove, for the purpose of being thrown, very thoroughly heated, and in great quantity, around the front oven, and, when the damper is opened, around both ovens ; it being distinctly understood that I do not claim a fire-plate, in itself, nor ribs for guiding air along a fire plate, in themselves, but only my mode of pitching the arch of the fire plate, and arranging the air-chamber in combination with the flues and damper, as described, so as to produce the afore-mentioned effect.

HOSEA H. HUNTLEY.

No. 9360.—*Improvement in Hot-Air Furnaces.*

What I claim as my invention, and desire to have secured to me by letters patent, is a spiral radiator, constructed substantially as above described, whether the pipe be of a round, square, or oval form in section, or the coils be round, square, or other shape.

APOLLOS RICHMOND.

No. 9361.—*Improvement in Locks.*

I do not claim the tumbler, A, or the lever, B ; for they are employed in many locks, and have been long known. But what I claim as my invention, and desire to secure by letters patent, is the employment or use of a guard, F, constructed, arranged, and operating in the manner substantially as herein described, whereby the lock is prevented from being picked by obtaining a pressure upon the bolt, as set forth.

F. C. GOFFIN.

No. 9362.—*Improvement in Constructing Ploughs.*

What I claim as the invention of the aforesaid Wm. L. Hunter and myself, in the construction of the above described plough, is bolting the standard mould board, landside, and share, to the block, F, or its equivalent, instead of bolting or fastening the parts to each other, as has been practised heretofore ; which block, F, may be connected to the beam by a bolt, K, or otherwise, substantially as described and represented

ALBERT GARDNER.

No. 9363.—*Improvement in Pile Wires and Pincers for Weaving Pile Fabrics.*

Having pointed out the nature of my invention and its mode of operation, I would remark, that I do not wish to confine myself to the precise form of the parts represented; nor do I claim as new constructing pile-wires with heads or eyes, for this is the usual mode of constructing them for hand looms. But what I do claim, and desire to secure by letters patent, is making one part of the pile-wires which is to be grasped by the pincers, wedged form, or oval shaped, in combination with grooves in the jaws of the pincers to conform thereto, substantially in the manner and for the purpose specified.

E. B. BIGELOW.

No. 9364.—*Improvement in Edge Planes for Shoemakers.*

What I claim as my invention, and desire to secure by letters patent, is securing the plane iron or knife in a sliding tongue, passing through a mortise in the body or handle of the plane, substantially as herein set forth, whereby, with great simplicity of construction, I obtain the facility of adjusting the instrument to the thickness of the sole of the boot or shoe, and of employing the draw cut.

NICHOLAS BUCHER.

No. 9365.—*Improvement in Sewing Machines.*

What I claim as my invention or improvement is as follows: I do not herein intend to claim in the mechanism for feeding the cloth, "a notched bar, which has a vertical or up and-down motion, for fastening the cloth upon, and relieving it from the notches of said bar, by striking it against a yielding plate, and a lateral motion, or motion forwards and back;" but what I do claim as an improvement thereon, is the employment of one or more burr wheels, *g*, applied to the carriage *K*, and kept continually against the cloth by a spring, (so as to preserve the cloth from falling away from the spring plate or presser over it,) in combination with a spring brake, *k*, operated as described; the whole being combined and made to operate together substantially as specified.

And in combination with the presser, *G*, and the lower needle, I claim a mechanism by which an increase of thickness of the cloth is made to move the lower needle to the left, the distance required to bring it into correct position with respect to the upper needle, so as to prevent the said upper needle from passing into the cloth before passing into the bow of the thread of the lower needle, as set forth.

And I claim the combination of the slide rod, *m*², the box, *n*¹, screw, *S*, slotted arm, *v*, shaft, *w*, arm, *x*, connecting rod, *f*¹, slide, *a*¹, stationary plate, *b*¹, and cam plate, *c*¹, as applied to the fulcrum pin, *W*, of the lever, *V*, and to the presser, for the purpose of moving the lever with respect or nearer to the cam, *U*, for the purpose and in the manner herein described.

CHRISTOPHER HODGKINS.

No. 9366.—*Improvement in Vibrating Propellers.*

What I claim as my invention, and desire to secure by letters patent, is the combination in a field or row of a multiplicity of inclined planes or sculls, secured by gudgeons on one of the sides thereof in a frame vibrating horizontally, and the graduation of their propelling velocities by a similar multiplicity of check pins or stops, so adapted to the respective planes or sculls that, in vibrating the same, they may propel as nearly as possible in equal times, and thereby reduce the propelling principle of the tail of a fish, as nearly as may be, to mechanical purposes, substantially as above described, for the propelling of all kinds or classes of vessels or boats by the power of steam or other power, and with or without sails, as occasion may require.

FRANKLIN KELLSEY.

No. 9367.—*Improvement in Gas metres.*

What I claim as my invention, and desire to secure by letters patent, is the chamber, B, and syphon, M, in combination, in the manner substantially as described, with the pipes, I, J, or other pipe or pipes having an opening or openings similar to J, at the required level of the liquid in the metre, for the purpose of preserving the level, and discharging the surplus liquid from the metre.

JOHN LAIDLAW.

No. 9368.—*Improvement in Saw-gummers.*

Having thus fully described my improved apparatus for gumming saws, what I claim therein as new, and for which I desire to secure letters patent, is the combination of the frame, *a*, *b*, shoe, *g*, and set screws, *h*, in the manner and for the purposes set forth.

J. D. OTSTOT.

No. 9369.—*Improved manufacture of Wire Ferrules.*

What I claim as my invention, and desire to secure by letters patent, is the manufacture of ferrules from iron wire by cutting them from a helical coil in such a manner that both ends of each ferrule will be perfectly smooth, true, and square across, at right angles to the length, so that no other finishing of the ends will be needed to render them fit for use, and so that, when soldered, they will be the most convenient and durable ferrules which can be made, when manufactured in the manner substantially as described.

WM. T. RICHARDS.

No. 9370.—*Improvement in Seed Planters.*

Having thus fully described my invention, what I claim as new, and desire to secure by letters patent, is the two hollow disks combining a hopper, plough, and carrying wheel, substantially as described, in combination with the segment plates, *g* and *h*, or their equivalents, by

which the discharge of seed is regulated, operating substantially as in the manner and for the purpose herein fully set forth.

CHAS. RANDALL.

No. 9371.—*Improvement in Cooking Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the guard plate for carrying the products of combustion under the oven, that part thereof may pass around and over it to the front, and the rest continue to and up the back flue, substantially as specified, in combination with the recess in the rear of the fire chamber, for extending a portion of the fire near to the oven, and the deflection plate for dividing the draught, and carrying it towards each end of the oven, substantially as and for the purpose specified.

MANLY C. SADLER.

No. 9372.—*Improvement in Seed Planters.*

In combination with the regular and positive discharge of seed by means of the ordinary seed distributor of seed drills, I claim the supplemental or occasional discharge of seed by a supplemental seed distributor, put in and out of action at the discretion of the operator of the machine, substantially as herein set forth.

FRANCIS TOWNSEND.

No. 9373.—*Improvement in Seed Planters.*

What I claim is the combination of the perforated register plate, *e*, the adjusting screw, *f*, and the springs, *g*, *g*¹, arranged and operating as described.

C. S. TREVITT.

No. 9374.—*Improvement in Seed Planters.*

Having thus described my improvement in the distributing apparatus of seed planters, it will be understood that I do not mean to claim the use of a reciprocating gauge plate, having oblique feed openings therein, operating in combination with openings of different obliquity in the grating plates and bottom of the hopper, for increasing or diminishing the feed of the seed to be sown, while the machine is in motion, by increasing or diminishing the traverse or sliding movement of the gauge plate. But what I do claim as my invention, and desire to secure by letters patent, is the employment of the pivoted oscillating plate, *M*, when made with oblique openings, *N*, on opposite sides of its centre, reaching to, and forming outlets at the circumference of said plate, in combination with segmental or other similar openings, *L*, above the oblique openings, and a central annular opening, *P*, in the ring plate, *O*, whereby, during the oscillation of the pivoted plate, *M*, the seed is not only discharged from the outlets of the oblique openings over the circumference of the ring plate, but also through the central annular opening, *P*, of the ring plate from the centreward ends of the oblique openings.

H. VERMILLION.

No. 9375.—*Improvement in Ventilators.*

I do not claim a ventilator made of a series of flat plates arranged in a circle, with openings between them; nor do I claim one made of a series of plates arranged in a circle, or around an axis, and with openings between them, and each made to stand tangential or curved (transversely) to the arc of a circle or curved line of the set of plates; but what I do claim as my invention is a ventilator constructed of a single series of curved or angular plates, *a, b, c, &c.*, and openings, *i, i, i, &c.*, and capped, connected with a tube or flue, and having each plate curved or made angular, convexly, or concavely, out of the general line of their arrangement around a common axis, as represented in the drawings.

DAVID WELLS.

No. 9376.—*Improved method of securing Vault and Safe Doors, &c.*

I do not claim the employment or use of a detached flanch or single lock bolt, operating similar to the flanches herein described, for that has been previously used; but, having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is securing or fastening the doors of safes, bank vaults, &c., by means of movable flanches, *D, E, J*, arranged and attached as herein shown and described, by which means a continuous bolt is formed all around between the door and its mouth piece, preventing the admission of air into the safe, which is thereby rendered secure against fire, and the door against force.

F. C. GOFFIN.

No. 9377.—*Improvement in mode of counterbalancing Harness in Looms.*

I do not claim the mere upright position of the jacks, or the mere counterbalancing of the harness; but what I do claim, and desire to secure by letters patent, is the construction of the long double heddles or jacks, *D, D*, in such a manner, and so hanging them on the axle, *E*, by a short arm, or its equivalent, that, in their vibrations, neither end of them shall pass beyond a vertical plane passing through the axle on which they rock or oscillate, so that the weight of the jacks shall be thrown outside of their points of suspension, thus counterbalancing the weight of the harness.

JAMES GREENHALGH.

No. 9378.—*Improvement in Self-acting Mules.*

Having thus fully described my invention, I will proceed to state what I claim and desire to secure by letters patent, without confining myself to the precise construction and arrangement of the parts, or to the precise manner of operating them:

First. I claim backing off or reversing the spindles to unwind the yarn from them, and regulating or altering the amount of backing off as the building of the cops progresses, by means of a step or incline of varying form, extending along a revolving cam, substantially such as is exemplified in the part from 25 to 5, on the cam, *B*; the said step or incline governing the revolution of the spindles.

Second. I claim the mechanism for making the finger, *d*, through which the irregular surface of the cam, *B*, or its equivalent, acts upon the mechanism which drives the spindles in backing off and building on, traverse the said cam or equivalent, and keep it to the surface, consisting of the screws, *e* and *k*, the nut, *j*, cord or chain, *f*, lever, *G*, and stud, *h*, operating in combination, in the manner substantially as described.

WANTON ROUSE.

No. 9379.—*Improvement in machine for Drilling Stone.*

I claim the arrangement, (in a swinging or other frame,) for the purpose of drilling rocks, of two cross-heads, the one with a reciprocating motion, and the other connected therewith, and bearing the drill, with a reciprocating and progressively advancing motion, substantially as described, and this however such alternate advance and recession may be effected.

I also claim the arrangement of, substantially, a sliding bar, for the purpose of changing both the rate of rotation and the rate of advance of the drill by one movement, for the purpose and in the manner substantially as described.

I do not claim the ratchet wheel and pawl-holder, operated by the inclined groove, by itself; but I claim the making the ratchet-cylinder, or equivalent rotating arrangement, slide upon the mandrel or drill-stock, as the same advances, in such manner that the pawl holder projection retains its place in the inclined groove, substantially as herein described.

LEM. P. JENKS.

No. 9380.—*Improvement in Sewing Machines.*

I claim as my improvement the *two* rotating draft-hooks, (or their equivalents,) separate from the needles, in combination with the *two* needles and two thread-guides, made to operate together, substantially as specified.

And I claim the improvement of so constructing and operating the needles and thread-guides, that each needle, directly after passing into and through the cloth, shall pass through the thread-guide, which is on that side of the cloth opposite to the side of it in which the needle first enters, meaning to claim the arrangement of each needle and its thread-guide respectively on opposite sides of the cloth, they being constructed and operated in the manner specified. In F. R. Robinson's machine, they are arranged and made to operate on the same side of the cloth.

And I also claim the combination of the rocking thread-lifter, or its equivalent, with the needle and presser; the said thread-lifter being operated, as described, by the thread-guide lever, or any other proper means.

JOHN G. BRADEEN.

No. 9381.—*Improvement in Hand Seed Planters.*

What I claim herein as new and of my invention, and desire to secure by letters patent, is—

First. A *seed planter*, having a tube or tubes, *b*¹, which, in operating the planter, is or are closed when placed in the ground, and so arranged

that it or they can be opened while in the ground, for the purpose of letting the seeds out.

Second. The arrangement of two or more tubes, b^1 and b , in such a manner that the operator can place the seeds in a hill at specified distances apart.

Third. The feeders, k , having a sloping cavity at the outer ends, and being so arranged that, as the seeds are carried up, they will slide out and pass into the tubes.

And, fourth. The arrangement of the feeders, k , and jaws, e and d , or valves of the tubes, b^1 , in connexion with the handle by which the machine is carried, so that the feeders and jaws, or valves, can be operated by the same hand with which the machine is carried.

WM. BULLOCK.

No. 9382.—*Improvement in Oil Presses.*

What I claim therefore as my invention is the arrangement of the screw within the body or interior of the box in combination with so applying it to one head of the box and to the platen, that by its revolution in one direction the platen will be drawn towards the said end of the box, all substantially in manner and for the purpose as above specified, not meaning to claim the combination of a screw, platen, and box, but intending to limit my claim as above described.

WM. P. CHADWICK.

No. 9383.—*Improvement in Printing Presses.*

What I claim as my invention, and desire to secure by letters patent, is the combination, substantially as described, of the fingers or grippers, f, f, f^1, f^1 , for seizing the sheets and holding them to the cylinder, and the fingers, e, e, e^1, e^1 , for throwing the sheets off from the cylinder, said fingers or grippers being attached to shafts arranged longitudinally to the cylinder and attached thereto, and being turned to give the necessary movements to the fingers by the revolution or vibration of the cylinder, through the agency of cranks and rods, or their equivalents.

JOEL DENSMORE.

No. 9384.—*Improvement in Marine Signals.*

Having thus fully described the nature and operation of my invention, I will state what I claim as new, and desire to secure by letters patent: I claim placing the lamp on a movable pedestal, E , or its equivalent, inside the many-sided signal box, B , and raising and lowering the same from one colored glass to another by means of the cord, H, H^1 , and pulley, G , or their equivalents, the whole being constructed, arranged, and operating in connexion with a signal, B, C , in the manner and for the purposes substantially as herein described.

THOMAS H. DODGE.

No. 9385.—*Improvement in Turning Jaw Vises.*

I am aware that the revolving jaw of a vise has been set, and then secured to any desired angle with the fixed jaw, and I do not claim the

so doing. But what I do claim as my invention, and desire to secure by letters patent, is constructing the jaw, H, of a revolving vise with a flange or projection, J¹, provided on the edge thereof with a female screw, in which mesh the screw, L, or other equivalent, operating on said jaw in the manner and for the purposes set forth and shown, by which I am enabled to both set and secure the revolving jaw at the same time.

ABIJAH HULBERT.

No. 9386.—*Improvement in Saddles.*

Having thus described the nature of my improvements, what I claim therein as new, and desire to secure by letters patent, is the construction of a saddle, with seat attached to the pommel and cantle by lips, as described, or in any equivalent manner, so as to be easily removable for the inspection, and if need be alteration, of any part of the saddle.

THOMAS MARDOCK.

No. 9387.—*Improvement in mode of Throwing Shuttlles in Looms.*

Having thus fully described the construction and operation of my "Columbia Bagging Loom," what I claim, and desire to secure by letters patent, is the combination and arrangement of the spring-triggers, *f, f*, cords, *h, h*, and treadles, 1, 2, 3, &c., so that the depression of any one of these treadles shall release the triggers on the forward movement of the lay, and allow the picker-staff to actuate the shuttle, substantially as set forth.

S. C. MENDENHALL.

No. 9388.—*Improvement in Hand Looms.*

Having thus fully described our invention, what we do claim, and desire to secure by letters patent, is the combination of nerve, K, operated by lay inclined plane, O, and its guides, M, M¹, and adjustable pin, W, or their equivalents, combined and operating as described, so that we can operate and vary the number of heddles substantially as and for the purpose set forth. We are aware that the picker-staff has been operated by hooks alternately raised from the shoulders on the picker-staff by pins on a vibrating slide operated by grooves in the treadle cam; this we do not claim. But we do claim the combination of the inclined plane, Q, on picker-staff, spring, T, and hooks, R, R, for the purpose of lifting the hooks in the manner and for the purpose specified.

STEPHEN C. MENDENHALL.

OBED KING.

EZRA KING.

No. 9389.—*Improvements in Steering Submarine Vessels.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the shaft of the propeller so as to pass through, and be guided by, the tiller, or the equivalent thereof, mounted on a universal joint, in order that the propeller may be driven by one hand,

while the vessel is steered in any direction by the other, substantially as herein set forth.

I likewise claim the combination of a universal rudder with a series of keels arranged on the top, bottom, and sides of the vessel, to aid in steadying her, and to facilitate the steering of her in various directions, by means of a universal rudder, substantially as herein set forth.

L. D. PHILLIPS.

No. 9390.—*Improvements in Horse-Shoe Machinery.*

Having thus fully described my improvement, what I claim therein as new, and for which I desire to secure letters patent, is the arrangement of shifting dies and adjustable levers and cams substantially in the manner and for the purpose set forth.

SOLOMON SHETTER.

No. 9391.—*Improvement in Twisting Tubes in the formation of Roving.*

Having thus fully described my invention and its adaptation, what I claim as new, and desire to secure by letters patent, is—

First. The construction and use of tubes for giving countertwist to roving, by having a slot in the side in such a manner that the roving can be laid into the tube without the use of a hook, as described.

Second. The construction, arrangement, and use of tubes, for giving countertwist to roving, in such a manner that, without disengaging the driving apparatus, the tube can be so turned on its support, that a hook can be passed between the bosses of the rolls through the revolving tube, to draw the roving into the tube without stopping the parts, as described.

Third. The construction and use of tubes for giving countertwist to roving by making them in two parts, into one of which the roving can be adjusted, and then dropped into the other, giving it the necessary rotary motion to form the twist.

HARVEY SILVER.

No. 9392.—*Improvements in Machinery for Crimping Metal Bars.*

We do not claim the flexible die, E, nor the combination of the permanent die, D, and flexible die, E, as they have been previously used. But what we do claim as our invention, and desire to secure by letters patent, is the peculiar manner of operating said dies as herein shown and described, viz: by means of the pressure rollers, G, G, and B, B¹; the lower rollers B, B¹, being fixed permanently in the frame, and the upper rollers, G, G, arranged so as to yield to the die when necessary; the movable bed, C, being attached by cord or chain to the roller B¹, by turning which the bed, C, is drawn between the upper rollers, G, G, and the lower rollers, B, B¹; the upper rollers forcing or compressing the flexible die, E, upon the permanent die, D, and bending or crimping the bar, as set forth.

GILES SLOCUM.
M. T. SAYLES.

No. 9393.—*Improvement in Cooking Range.*

What I claim as my invention is my improved combination of a heat radiating chamber applied to the rear end, and two draught flues applied to each of the four faces at top, bottom, and two sides of an elevated oven of a cooking range—that is to say I claim the combination of the heat radiating chamber, *q*, (against the end of the oven,) two draught flues, *A*¹, *D*¹, (against the bottom of the oven,) two flues, *B*¹, *C*¹, (against one side of the oven,) two draught flues, *E*¹, *F*¹, (against the other side of the oven,) and two draught flues, *G*¹, *H*¹, (against the top of the oven,) all connected and made to operate together substantially as specified. My said combination of flues, as they are above arranged, causing the smoke and other volatile products of combustion to pass from the back of the flue space under the boiling chamber into a flue leading under the rear part of the oven, and *transversely* across, or from side to side of the oven; thence up a flue leading against the side of the oven; thence down a flue leading against such side of the oven; thence into a reservoir flue leading *transversely* across, and under, and against the bottom of the oven; thence upwards into and through a flue leading horizontally and along the other side of the oven, and from front to rear of it; thence into and through a flue leading horizontally against such second or other side of the oven; thence into a flue leading across the top of the oven, and from side to side of it; thence into and through another flue leading over and against the said top, and in an opposite direction to that last mentioned; and thence into the chimney, or discharge flue.

GEO. S. G. SPENCE.

No. 9394.—*Improvement in Brick Machines.*

What we claim as our invention, and desire to secure by letters patent, is the roller, (*P*), in combination with a reciprocating series of moulds, for the purpose of gauging the quantity of clay to be compressed into the said moulds; the several parts being arranged and operating as herein described.

We also claim the method herein described of finishing the surface of dry clay bricks in moulds, by first shaving off the surplus material, and then smoothing the shaved surface by rubbing it under heavy pressure, *while confined in the mould*, to prevent it from breaking under the operation, as it would do if not so confined.

H. H. STAWBRIDGE.
DANIEL TYSON.No. 9395.—*Improvement in Automatic Fans.*

What I claim, and desire to secure by letters patent, is not mounting a fan upon a rocking chair and operating it from the motion of the chair, as that has been done before; but what I claim as my invention, and desire to secure by letters patent, is the mode of operating the fan by means of the rod, *G*, impinging upon the floor, and made to react by means of a spring, substantially as herein set forth.

SETH E. WINSLOW.

No. 9396.—*Improvement in Gas Burners.*

Having thus described my improvements in gas burners, what I claim as my invention, and desire to have secured to me by letters patent, is the use in a gas-burner of a distributor, constructed substantially as above described, for the purpose of producing a steady jet of flame, and for preventing the blowing and waste of gas in the burner.

A. H. WOOD.

No. 9397.—*Improvement in Reciprocating Die Spike Machinery.*

I do not claim a series of two or more gripping or holding dies, made to rotate around one common axis or shaft; nor do I claim reciprocating dies, each provided with its own gripping die. But what I do claim as my invention, is the combining the two reciprocating bed dies, G, H, (affixed to a carriage having a horizontal movement, as stated,) with the gripping lever, D, as the upper die for both, so as to operate therewith, substantially in the manner as above described.

MOODY BELKNAP.

No. 9398.—*Improvement in Expanding Bits.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is so forming and combining the movable and stationary parts of an expansion bit for boring different sized holes, that a cutting edge shall at all times be preserved entirely across the bit, and, at the same time, the cutting point on the movable part thereof shall always be parallel with the shank of the bit, or the line of the hole, substantially as herein described.

I also claim the rising and falling of the movable part of the bit, as it is contracted or expanded, by means of the inclined slots and set screws, or their equivalents, so that the lip on the movable part shall become the cutter when boring the largest size holes, (the other lip being at rest,) and the lip on the stationary part shall become the cutter when boring the smallest size holes, the other lip being at rest, by which means I am able to form the lips of the proper shape for different-sized holes without changing the cutters, substantially as described.

CHAS. L. BARNES.

No. 9399.—*Improvement in Seed Planters.*

Having thus described our improvements in seeding machines, what we claim as our invention, and desire to secure by letters patent, is the employment of the sigmoid or other similarly curved or angular receiving and discharging openings, *g, h, i*, in combination with the reciprocating slide, S, and feeding stubs, U, for the purpose specified, the said reciprocating slide, S, having angular points, Y, projecting into the aforesaid sigmoid openings, for effecting the discharge of the seed from the outlets from which the stubs, U, are receding, while the latter are feeding the seed toward the opposite extremities or outlets of the openings, during

each movement of the slide, S, by means of the inclined sides of said points, Y, and the movement of the slide.

L. H. DAVIS.
SAMUEL PENNOCK.
MORTON PENNOCK.

No. 9400.—*Improvement in Flax Pullers.*

What I claim as my invention, and desire to secure by letters patent, for the purpose of pulling and gathering flax, is the employment of one or more pairs of rollers, substantially as described, in combination with the fingers or separators, or their equivalents, for presenting the stalks to the bite of the rollers to be drawn in, substantially as described.

I also claim, in combination with the rollers for drawing in the flax, as specified, the employment of the revolving arm or arms, for collecting and drawing the stalks to the bite of the rollers, as described; and finally I claim, in combination with the rollers for drawing in the stalks, as described, the employment of the fulcrum bar, substantially as described.

LEWIS S. CHICHESTER.

No. 9401.—*Improvement in Carpet Looms.*

Having thus described my improved loom, for weaving carpets and other fabrics by power, what I claim therein as new, and desire to secure by letters patent, is—

First. Actuating a positive let-off for the delivery of yarn, a positive take-up of the woven cloth, and a variable winding upon a beam of the cloth delivered from the take-up rollers, by the combination of the crank-pin, or cam, *z*, on the disk, *f*, or the equivalent thereof, with the alternating bar, *g*, and its appendages, substantially as herein set forth.

Second. The method herein described of working the trap boards, with suitable intervals of rest and motion, by means of the crank-cam, (*A, g*,) the rock shaft, (*c*¹,) and its arms, the lifting-rods, (*b*,) the cam, (*P*,) and lever, (*P*¹,) and the other devices, acting in connexion with these, for raising, and lowering, and oscillating the lifting-rods; the whole operating substantially as herein described.

Third. I claim the temples, constructed, arranged, and operated substantially as herein described, so that they will be open during the time the take-up rollers are acting, and closed at the time the lay beats up.

JOHN A. VAN RIPER.

No. 9402.—*Improved Machine for making Thimbles for Rigging, etc.*

Having thus described my improved machine for forming thimbles, etc., what I claim therein as new, and desire to secure by letters patent, is arranging the two halves of the forming groove upon the adjacent ends of two independent revolving mandrels, or shafts, which are free to slide towards and from each other, so as to hold the two halves of the groove in contact while the article is being shaped, and to separate the two halves of the groove to allow the finished article to drop out.

I also claim the combination of the divided shaping groove with a reciprocating former, operating in connexion therewith, substantially as herein set forth.

WILLIAM FIELD.

No. 9403.—*Improvement in Cotton Seed Planters.*

Having thus described my machine for planting cotton seed, what I claim as my invention, and desire to secure by letters patent, is, in combination with a rotating cylinder, or box, *f*, having apertures, *g*, in its perimenter, the projecting edges, or wings, *h*, *h*, radial ribs, or plates, *i*, and projecting fingers, or prongs, *k*, arranged around the axle, *j*; the whole operating to separate or disentangle the seeds to be sown immediately previous to the disposition thereof in the furrow, as set forth.

WM. A. GATES.

No. 9404.—*Improved Sash Stopper and Fastener.*

What I claim as my invention, and desire to secure by letters patent, is as follows:

First. The combination of the rocking plate (E) with the angular lever, (*f*, *f*¹,) the swinging lever, (*c*, *m*,) and the spiral spring, (F,) constructed and arranged, and operating in the manner and for the purposes herein specified.

Second. The rocking plate, E, combined with either a simple or compound lever, in the manner and for the purpose herein specified.

J. B. S. HADAWAY.

No. 9405.—*Improved Blind and Shutter Operator.*

What I claim as my invention, and desire to secure by letters patent, is the tubular shanked box hinge, with roller contained therein, as arranged with respect to the roller within the building, when the rollers are connected by a chain, and the whole is constructed as herein described, constituting a convenient blind or shutter operator.

R. V. JONES.

No. 9406.—*Improvement in Tanning.*

Having thus described the manner in which my chemical compound for tanning is compounded and used, what I claim as my invention, and desire to secure by letters patent, is the use of borax, in combination with nitre, alum, and terra japonica, in solutions of tannin, substantially as and for the purposes herein set forth.

The property of the borax I have found of essential use in raising the hides in the tanning process, and preparing it without injury for speedy and safe tanning.

DAVID KENNEDY.

No. 9407.—*Improvement in Bottle Stopper.*

Having thus fully described the manner of constructing our self-acting bottle and can stopper, we will proceed to state what we claim as our

improvement, and desire to secure by letters patent. We claim the combination of the ball stopper, *f*, together with the rod, *E*, attached to it, and the guides, *c*, *c*, in the manner and for the purpose substantially as herein set forth.

EDWARD KINSEY.
D. KINSEY.

No. 9108.—*Improvement in Cylinder Printing Press.*

Having thus fully described the construction and operation of my improved press, what I claim as my invention, and desire to secure by letters patent, is—

First. Such a combination and arrangement of a horizontal bed and cylinder of a printing press as will enable each forward movement of the bed to impart a revolution to the cylinder, for the purpose of taking or giving an impression, and permit it to remain stationary during the reverse movement of the bed, substantially as herein described.

Second. I claim, in combination with a horizontal cylinder moving in one direction, with alternate rest and motion, the inking and flying apparatus, substantially as described.

JOEL G. NORTHRUP.

No. 9409.—*Improvement in Perspective Drawing Apparatus.*

Having thus fully described my invention, I would state that I am aware that natural and other objects have been traced through and upon the surface of glass or other transparent medium, and I do not claim it, neither do I claim any of the parts of my apparatus taken separately; but what I do claim, and desire to secure by letters patent, is delineating natural and other objects in a diminished or increased size, with a lens, when used with the apparatus and in the manner described.

Prof. ADOLPH RICHTER.

No. 9410.—*Improvement in Printing Presses.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is so hanging or balancing the bed which holds the form, and moves up and down for each impression, upon springs, that its own weight shall compress the springs to a great extent, and the entire compression of them be completed by drawing the bed farther down whilst in motion, and that the elasticity of the springs when the bed is to rise will raise it up to the extent of their power, and the upward motion be completed by a separate arrangement, whilst in motion, for the purpose of relieving the machine from overcoming the inertia in moving the bed from a state of rest; the power to complete its motion being applied near the termination of its movement, substantially as described.

I also claim the arranging of the frisket and the inking rollers in separate carriages, moving on the same ways with such relative velocities as not to interfere with each other, and so that the frisket may carry off and bring back the sheet quickly, whilst the inking rollers may travel more slowly, and do more perfect work, substantially as described.

I also claim the pointing of the sheet, whilst being prepared for receiving the first impression, by an automatic movement attached to some moving portion of the press, and so that the operator may use both his hands in guiding and controlling the sheet.

I also claim the application of a blast of air, or its equivalent, for the purpose of forcing the sheets upon the registering points when the paper is being prepared for the reverse impression, so that the operator may use both his hands in guiding and controlling the sheet.

I also claim the removing of the sheet from the frisket, or from the press, by means of atmospheric pressure, applied in the manner herein described, or its equivalent, for the purpose of turning over the sheet in its delivery, substantially as described.

I also claim making the registering points adjustable in the paper table by passing it through a friction plate secured between two plates, and so that it may be moved in any direction by a slight tap, for the purpose of allowing for the unequal shrinking or drying of the paper, or of any movement of the form after the first impression is taken, substantially as herein described.

I also claim the combination of the open toggle and adjustable eccentric shaft, or pin, which operate the bed, for the purpose of regulating the impression by increasing or diminishing the distance between the bed and platen, substantially as described.

STEPHEN P. RUGGLES.

No. 9411.—*Improvement in Bracing and Supporting Card Teeth.*

Having described my improvement, I will state what I claim as my invention, and desire to secure by letters patent. What I claim, therefore, is the application of the material herein described to the front side of the leather fillet holding the card teeth, for the purpose of bracing and supporting said teeth.

CORNELIUS SPEER.

No. 9412.—*Improvements in Serving Mallets.*

What I claim as new in my invention, or improvement, and desire to secure by letters patent, is—

First. I claim the attachment and use of the clasp or hook to the hollow or concave part of saddle, A, of a serving mallet, for the useful purpose of holding it to the rope, while the operator brings the end of the marline from the spool over the pulley in the handle and upper edge of the saddle to the rope, where it is made fast without being wound round both saddle and rope, as is done in using other mallets; the whole being constructed and arranged substantially in the manner and for the purposes described.

Second. I claim the attaching to a serving mallet one or more sets of thumb screws, or any analogous device, for the purpose of pressing upon the spool, for the useful purpose of enabling the operator to serve the rope with any degree of tightness the yarn will bear without winding it round both saddle, rope, and handle, as is done in using other mallets; the

said screws being attached and operating substantially in the manner and for the purposes described.

DANIEL H. SOUTHWORTH.

No. 9413.—*Improvement in Railroad Car Seats.*

What I claim as my invention, and desire to secure by letters patent, is the employment of the double jointed slides, G, and jointed rods, H, with the jointed arms, E, jointed seat and back, A, B, pillars, D, and supports, K, arranged and operating substantially in the manner and for the purposes herein fully set forth.

DANIEL H. WISWELL.

No. 9414.—*Improvement in Cordage Machinery.*

What we claim as our invention, and desire to secure by letters patent, is regulating the speed of the receiving reel by the tension of the rope, substantially as herein described.

HEZEKIAH T. JENNINGS.
CHARLES S. COLLIER.
THOMAS P. HOW.

No. 9415.—*Improvement in Machines for Drilling Stone.*

I claim the improvement of making the drill rod to slide through the piston rod, substantially in manner as above set forth.

And I also claim the combination of the rocker lever, K, the wedge, M, the bolt, P, within the lever, the two cam plates, N, O, the spring catch, Q, the spring and the two projections, *c*, *d*, as applied to the drill shaft, the carriage or block, I, and the slide-ways thereof, and made to operate together, and to actuate the drill, substantially in manner as herein-before set forth.

J. J. COUCH.

No. 9416.—*Improvement in Swinging Churns.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the swing slotted board, wheel, rock-shaft, and lever, for the purpose of producing two complete motions of the dash from one full oscillation of the pendulum bars, substantially as herein described, to be denominated the "oscillating double acting dash churn."

WM. F. DAVIS.
NATHAN DAVIS.

No. 9417.—*Improvement in Pincers for Operating Pile Wires.*

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by letters patent, is the manner herein described of constructing and operating the claw for withdrawing, carrying, replacing, and releasing the figuring wires, viz: by making one of the jaws, *c*, fixed, and providing it with a pin or projection, *e*, extending into a suitable slot in the sliding part, *a*, of the claw, so that as

said part, *a*, moves back and forth in contact with the fixed part of the jaw, the pin or projection therein will, when the figuring wire is to be seized, keep it in position for being properly caught in the claw, and when it is to be released will prevent it from moving with the sliding jaw, as set forth.

AUGUSTUS FAULKNER.

No. 9418.—*Improvement in Spaces for Setting Type.*

What I claim as my invention, and desire to secure by letters patent, is the cyma recta, or other more suitable shaped elastic space, *A*, for facilitating the art of setting type, or for saving the time and labor usually expended in "spacing out," "thin spacing," regulating the distance of words in the same line from one another, and "correcting proof," in the manner herein set forth.

E. C. HARMON.

No. 9419.—*Improvement in the mode of Generating Heat.*

We do not claim the use of tar as a fuel, as that is well known and practised in the manufacture of gas. But what we do claim as our invention, and desire to secure by letters patent, is the adaptation of, or rendering available, tar as a fuel for the production of the intense and steady heat required for the melting and manufacturing of glass, by introducing water, or the vapor of water, into the furnace, in contact, or in close proximity, or in combination or mixture, with the tar, substantially in the manner set forth.

WILLIAM HARTELL.
JOSEPH LANCASTER.

No. 9420.—*Improvement in mode of Fastening the Palings to the Rails in Iron Fences.*

What I claim, and desire to secure by letters patent, is the circular projection, or its equivalent, on the rail and lower part of the paling, in combination with a corresponding cavity on the lower rail, so arranged that by giving a partial rotation to said rail, the palings will be clamped to the rails, in the manner and for the purpose herein described.

GEO. HESS.

No. 9421.—*Improvements in Machinery for making Wadding.*

What I claim, and desire to secure by letters patent, is—

First. I claim ironing the two surfaces of the combined material, after it has been sized and doubled, by giving the ironing rollers a reverse motion to that of the bat, for the purpose and in the manner set forth.

Second. I also claim the arrangement of the frames supporting the sizing and drying apparatus, one above the other, so that the sheets of fibrous material forming the outsides of the wadding may be more readily sized and dried independently of each other, and also for the purpose of

facilitating the introduction of any number of bats of fibrilous material between the sizing sheets, in order to increase the thickness of the wadding or batting, substantially in the manner herein described.

HIRAM T. LAWTON.

No. 9422.—*Improvement in Processes for preparing Paints.*

What I claim as my invention, and desire to secure by letters patent, is the process of treating magnesian minerals, such as serpentine, silicates of magnesia and iron, and similar rocks, by mineral acids, to prepare from the sedimentary, or insoluble, or undecomposed portions of such rocks a mineral product, which I call a basis, to be used in the preparation of pigments, substantially as set forth in the specification.

HEMAN S. LUCAS.

No. 9423.—*Improvement in Harvesters.*

Having thus described my improvements, and indicated some of the modifications of which they are susceptible, what I claim as my invention, and desire to secure by letters patent, is—

First. The arrangement of the track scraper and driving wheel in such manner that the latter, while the machine is cutting one swath, will run in the track cleared by the former when the machine was cutting the previous swath, as herein set forth; but in this patent I make no claim whatever to the track-scraper itself.

Second. The projections (7) on the under-side of the upper bars (5) of the finger, in combination with the chamfer or recess on the lower inside corners of said bars, to counteract the tendency of wire-grass and other fibrous obstructions to pass in between the cutter bar (e) and the sides of the recess in the upper part of the finger in which it is guided.

Third. Forming the guard fingers (o) of two parts, (m and n,) interlocked at the point, substantially as herein set forth, so that the grass cannot lodge in the joint and form an impediment to their entering between the stalks of the standing grain.

Fourth. In combination with a raker stand or seat, I claim a removable platform, or raking bottom, constructed with a wing that extends from the outer end of the cutter over the frame, and holds up the butts of the straws above the stubble, which otherwise would obstruct the discharge of the grain from the platform, substantially as herein set forth.

JOHN H. MANNY.

No. 9424.—*Improvement in Printing Presses.*

I do not claim placing the bed plate in a vertical position, as I am aware this has been done before; but what I do claim as my invention, and desire to secure by letters patent, is placing the bed plate in a vertical position when a reciprocating motion is imparted to it, by which two impressions can be made at each forward movement of the said bed plate, substantially as herein set forth.

I also claim the combination of the vertically acting bed with a cylinder or cylinders, arranged in such a manner that the forward movement of the bed will impart motion to the cylinder or cylinders, to give or take

an impression, and allow said cylinder or cylinders to remain stationary during the return-movement of the bed, substantially as herein set forth.

CHARLES MONTAGUE.

No. 9425.—*Improvement in Boot Trees.*

Having thus described my invention, what I claim therein as new, and desire to secure by letters patent, is—

The arrangement and combination of the levers, *d*, friction rollers, *e*, screw, *c*, and slide, *k*, or their equivalents, with the back part of the tree, which when contracted all bed closely therein, as and for the purpose herein described.

DAVID SADLEIR.

No. 9426.—*Improvement in Printing Presses.*

Having thus fully described our improved printing press, what we claim therein as new, and desire to secure by letters patent, is—

First. The arrangement and combination of the movements in connexion with the bed, *D*, by which an extent of motion is imparted to the said bed much larger than that of the sweep of the operating crank, whilst the whole of the said movements only occupy the space within the frame work of the press below the bed, viz: the pinion shaft, *A*, having pinions upon it, which gear into stationary racks, *B, B*, made fast to the sides of the frame, and into racks, *C, C*, secured to the under side of the bed, *D*, the forked lever, *E*, (or its equivalent,) having its forked extremities connected to the said pinion shaft, and its opposite end jointed to the lever, *F*, that rises from the oscillating shaft, *G*, and the pitman, *H*, connecting the said lever, *F*, with the crank on the driving shaft, *I*, or the equivalents of the said movements when combined and operating substantially as herein set forth. Disclaiming, however, the principle of imparting motion to a printing press by direct application of power to the bed.

Second. We claim the combination and arrangement of the pressure cylinder, *J*, and the bed, *D*, with the conveying bands, *p, p*, the nippers secured to the said bands, and the cams for operating the said nippers, substantially as herein set forth.

Third. We also claim the arrangement of the upper and lower tables, *K* and *L*, with the pressure cylinder, *J*, the bed, *D*, the conveying bands, *p, p*, the nippers attached to the said bands, and the cams for operating the nippers, in such a manner that an impression can be made at each right and each left movement of the form under the cylinder, and the sheets be deposited, after receiving their impressions, upon the said lower tables, substantially as herein set forth.

AARON H. CRAGIN.

MARTIN BUCK.

J. H. BUCK.

F. A. TENNEY.

No. 9427.—*Improvements in Whiffle-tree.*

Having thus described the construction and also the operation of my improved safety whiffle-tree, what I claim therein as new, and desire to

secure by letters patent, is a shaft with the ends bent at right angles, and the lever, making part of the same, arranged and operating substantially as herein set forth.

DEWITT C. WILLIAMS.

No. 9428.—*Improvements in Machinery for screwing Bolts, &c.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The movable ways running in yielding bearings back and forth under the machine and supporting the vise, substantially as set forth.

Second. The adjustable stop or gauge on the side of the friction nut working in contact with the movable finger, or any similar projection in the die chuck.

JOHN CASWELL.

No. 9429.—*Attachment for converting the Ordinary into a Taper Vise.*

What I claim as my invention, and desire to secure by letters patent, is an attachment to the vise substantially as herein described, and for the purposes set forth, which attachment is removable at pleasure, and requires no change in the construction of the vise to which it is applied.

JEREMY W. BLISS.

No. 9430.—*Improvement in Hoes.*

The improvement that I claim as my invention, and desire to secure by letters patent, is the extension of the blade of the common cotton hoe upward and backward, in a curve form, B, in such form and manner as to enable the laborer, by inverting his instrument and pushing it from him, to remove, by the cutting edge, B, any grass, weeds, superfluous plants, &c., as described.

WM. C. FINNEY.

No. 9431.—*Improvement in Mortising Machines.*

Having thus fully, clearly, and exactly described the nature, construction, and operation of my improvement in mortising machines, what I claim as new, and desire to secure by letters patent, is the sliding wrist, O, connected with the chisel, and also with the driving power, in the manner described, in combination with the mechanism described, or its equivalent, for sliding said wrist, so that the operator can, during the motion of the machine, vary the depth of cut of the chisel, or cause it to be suspended, without disconnecting the driving power.

JOSEPH GUILD.

No. 9432.—*Improvement in Endless Belts to Thrashing Machines.*

Having thus described the nature of my improvement in machinery for thrashing and separating grain, I wish it to be understood that I lay no claim to originality in passing the screenings a second time through the thrashing apparatus, as that has already been done; neither do I

claim the use of a continuous apron with open slats or interstices for carrying off the straw. But what I claim herein as new, and desire to secure by letters patent, is the continuous open apron, having its belt formed of links, whose cogs are, at one part of their rotation, (in connexion with the pinions,) a means of propulsion, and are, at another part of their rotation, (in connexion with the rollers or other stationary objects,) a means of agitation of the said apron.

JOHN R. MOFFITT.

No. 9433.—*Improvement in the construction of Ploughs.*

In my cultivator plough there are several parts which are common to ploughs, or such as have been more or less separately, or in connexion, used by others—the central bar, A, or body of the plough, from which is reared the standard or sheath, B, the angular wings or stirrers, F, F, confined to the central bar, A, the double share or mould board, D; therefore to these parts no special claim is made, either separately considered or in combination. But I claim as my improvement, mounting the double pointed share, D, upon the central shoulder-piece, C, and fastening the same by a link-piece, K, as described.

F. E. RICHARDSON.

No. 9434.—*Improvement in Rotary Knitting Machines.*

What I claim as my invention, is the combination of the mechanism, termed the stop motion, with the rotary knitting machinery of the kind as above specified, the object of the stop motion being to arrest the operations of the machine on breakage of the yarn.

HORATIO G. SANFORD.

No. 9435.—*Improvement in Rotary Knitting Machines.*

I do not claim the combining one or more draft rollers and a take-up roller or drum in one *frame*, which, when put in rotation, shall carry them simultaneously around with it, so as to draw forward and wind up a rope or cord, or like manufacture, formed of strands twisted together; nor do I claim the application of a take-up roller or mechanism, as used on either a common warp or flat braid knitting machine. What I claim as my invention is to so combine a draft and take-up roller, and mechanism for revolving it, with a rotary series or set of needles and other mechanism of the above mentioned peculiar kind for knitting, that such draft roller shall rotate simultaneously or with the same velocity with such series of needles, so as to prevent the longitudinal rows of stitches from being produced in helical lines, and the evil consequences resulting to the fabric therefrom.

I also claim the arrangement of the draft and take up mechanism, in connexion with the knitting mechanism, supported by two separate frames, A, T, and also their connexion with the mechanism for producing an equal and simultaneous rotation of these frames, A, T, all substantially as described, whereby there shall not only be no connexion between the frames, A, T, to extend through the fabric, but no projec-

tion from the frame, A, to come in contact with the presser, stitch wheels, and cam bar, or their respective supports, during the simultaneous and equal rotations of both or either of the said frames, A, T.

DANIEL TAINTER.

No. 9436.—*Improvement in Cooking Stoves.*

Having thus fully described my improved cooking stove, what I claim therein as new, and for which I desire to secure letters patent, is the combination and arrangement of the front and rear flues, *e* and *b*¹, and air chamber, *c*, substantially as herein set forth.

H. J. RUGGLES.

No. 9437.—*Improvement in the manufacture of Stone and Earthen Ware.*

What we claim as our invention, and desire to secure by letters patent, is—

First. We claim the mode of attaching the mandrel so that it may revolve on its axis by means of friction with the clay, and at the same time be moved from side to side within the mould.

Second. The mode adopted for varying the relative thickness of the different parts of the manufactured article.

JACOB WISE.

FREEMAN WISE.

No. 9438.—*Improved machinery for Bending Pail Bails, &c.*

Having thus described the construction and operation of my machine, what I claim as my invention, and desire to secure by letters patent, is the combination of the saddles, Q and R, the brake, N, N, the bar, L, and the movable block, V, all operating in the manner and for the purpose substantially as herein described and set forth.

ROBERT BUNKER.

No. 9439.—*Improvement in Seed Planters.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is making the cells in the tops of the grooves, made as described, so that they shall carry single grains, and combining therewith a cleaner, which extends into the groove behind the seed as each cell in turn arrives at or over the seeding tube, for the purpose of carrying around and depositing with certainty the seeds or grains singly, substantially as described.

L. W. COLVER.

No. 9440.—*Improvements in Saw Gummers.*

What we claim therein as new, and desire to secure by letters patent, is the nut, (*i*), having gudgeons (*j*) occupying open notches (*k*) in one of the jaws of a saw gumming apparatus, in which the cutting portion is situated between the power and the fulcrum, for the objects explained.

RICHARD S. CRAMER.

CYRUS C. BLOSSOM.

No. 9441.—*Improvements in Drilling Machines.*

What I claim as new, and desire to secure by letters patent, is—

First. The peculiar manner of giving the slow automatic feed motion to the spindle and the fast receding motion, by means of the sliding pinion, G^o, collar, F, and screw, C, which is attached to the spindle, B, combined with the two sets of cogs, or their equivalents, upon the face of the same disk; the several parts above named being constructed, arranged, and operating in the manner and for the purpose as herein shown and described.

Second. I claim the peculiar method of constructing and arranging the clutch, M, as herein shown and described, by which the inclination of the clutch may be changed, as described, and the position of the clutch also moved or changed bodily in a horizontal direction.

CHARLES W. COE.

No 9442.—*Improvement in Hats.*

I am aware that metallic rings or bands have been used in helmets and similar articles, for the purpose of a support; but I do not know of any hat in which a thin strip of foil has been inserted between the leather or sweat and the hat; therefore what I desire to secure by letters patent, is the metallic strip or strips inserted between the leather or sweat and the hat, and attached to either or both the hat or sweat, as described and shown.

FRANCIS DEGEN.

No. 9443.—*Improvement in Tonguing and Grooving Apparatus.*

Having described my invention and its operation, what I claim, and desire to secure by letters patent, is the shaft, T, connecting rods, Q¹, Q², cutter stocks, N¹ and N², and cutters, P¹ and P², and slides, M¹ and M², in combination with the stationary tonguers and groovers, for the purpose of tonguing and grooving boards, &c., as set forth.

PHINEAS EMMONS.

No. 9444.—*Improvement in Hot Air Furnaces.*

Having thus described my invention, I will state that I do not claim the employment of a series of upright tubes or flues over a fire chamber for the purpose of heating air; nor do I claim the use of deflecting plates simply as such; but I do claim the combination of the deflecting plates with the system of upright flues directly over the fire chamber, when such flues are arranged in the manner set forth, so that each flue of itself shall act as a deflector and insure a complete circulation through the whole system, substantially in the manner described.

STEPHEN GATES.

No. 9445.—*Improved machinery for Bending Carpet-bag Frames, &c.*

I do not confine myself to the use of any particular mechanism for closing the clamps, and gripping the bars, C, C, nor for drawing them

down upon the edges of the bars. But what I claim as my invention, and desire to secure by letters patent, is the employment, for the purpose of bending and forming carpet-bag frames, or for bending two or more flat metal bars edgewise for any purpose, of a pair of clamps, C, C, each moving independently of the other, in the direction of the width of the bars, and having recesses, *a, a*, and self adjusting movable pieces, N, N, as described, combined in any way, substantially as set forth, with a table, A, and bending plate, O.

E. L. GAYLORD.

No. 9446.—*Improvement in Grain and Grass Harvesters.*

What I claim as new, and desire to secure by letters patent, is the combination of the crown wheel with the shafts, E, E, with their respective pallets, (J, J,) acted upon alternately by the cogs of the wheel, the shafts being connected so as to turn in opposite directions, whereby a vibratory motion is given to the blade.

I do not claim either of these singly, but when combined, for the purposes and in the manner substantially as above described.

C. B. BROWN.

No. 9447.—*Improved Galvanic Battery.*

What I claim as my invention, and desire to secure by letters patent, is the within-described improved arrangement of the old voltaic pile, the same consisting in so separating each galvanic pair from that next it in the series, and connecting them with short wires, and forming the plates with suitable perforations, that the strips of leather or flannel, or their equivalent, may be at once saturated with the exciting liquid, by immersing the battery therein.

LOUIS DRESCHER.

No. 9448.—*Improved Hinge for Moulders' Flasks.*

Having thus described the construction and operation of my hinge, what I claim as new, and desire to secure by letters patent, is a hinge for moulders' flasks, constructed substantially in the manner as described and represented, by means of which the cope is raised in the jaws of the hinge, as set forth.

GEORGE GRANT.

No. 9449.—*Improvement in Chairs.*

What I claim as my invention in the above-described chair, and desire to secure by letters patent, is operating the leg rest from the motion of the seat and back, by means of the lever, L, and rod, V, or their equivalent.

JNO. T. HAMMITT.

No. 9450.—*Improvement in machines for manufacturing Hat Bodies.*

Having thus fully described my improved method of planking hat bodies, what I claim therein as new, and for which I desire to secure letters patent, is—

First. The feeding belts, constructed substantially as described, with jointed chains, having cloth stretched between them, as set forth, by which their motion is exactly determined and equal.

I also claim the combination of the revolving endless planking board or table, with the feeding belts, both moving with the same velocity, for the purpose as described.

LANSING E. HOPKINS.

No. 9451.—*Improved Lock.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the circular tumbler, F, or its equivalent, in combination with the slotted collar, G, which encompasses the spindle, D, of the knob; said collar and tumbler, or its equivalent, being constructed and operating in the manner substantially as herein described.

RICHARD KETCHUM.

No. 9452.—*Improved Pad Lock.*

What I claim as my invention, is giving a forward motion to the hasp, and acting upon the tumblers, by means of the same key, when the parts are arranged so that the key acts directly upon a portion of the hasp, substantially in the manner described.

Secondly. I claim the double-acting spring herein described only when used in connexion with such a form and arrangement of hasp as will cause it to actuate the tumblers, and not only throw the hasp out, but hold it thrown out and fully open, in the manner described, confining my claim to this device.

RHODOLPHUS KINSLEY.

No. 9453.—*Improvement in the mode of Frosting Glass.*

What we claim as our invention, and desire to secure by letters patent, is—

First. Frosting and figuring glass by fixing the plates to be treated in a trough or vessel containing sand, pebbles, and water, and subjected to a short, quick, vibratory motion, in a longitudinal direction, by any suitable mechanical movement, thus causing the glass to pass through the mass of gritty material before any considerable momentum is imparted to that mass, as more fully set forth herein.

Second. We claim forming ornaments upon the glass by the application of patterns or designs, in connexion with the process of frosting by the action of the sand and pebbles, substantially as set forth herein.

JOHN LEVY.

CHARLES JONES.

No. 9454.—*Improvement in Manufacturing Wooden Type.*

I do not claim the use of a press and dies for the purpose of making wooden type. But what I do claim as new, and desire to secure by letters patent, is the arrangement of the propelling lever, D, so that, by its

return movement, in combination with the feeding lever, G, spring, H, dog and feeding tube, I, it will move forward, as required, the blank wood to receive the impression, as above described and set forth.

JOHN McCREARY.

No. 9455.—*Improvement in Pill Making Machines.*

What I claim as my invention, and desire to secure by letters patent, is—

First. Moulding or forming pills by means of two cylinders, B, B, having each a number of recesses, *a, a*, in its periphery, the recesses in one cylinder matching with those in the other, and each matching pair forming a mould of the required form of the pill, the said cylinders revolving in opposite directions, and the pill mass being conducted between them, substantially as herein described.

Second. The bands, I, I, of India-rubber, or any sufficiently elastic material, passing round or partly round the mould cylinders, for the purpose of expelling the pills from the recesses, *a, a*, after the moulds are open, substantially as herein set forth.

ERASMUS A. POND.

No. 9456.—*Improvement in Shingle Machines.*

Having thus fully described my improved shingle machine, what I claim therein as new, and desire to secure by letters patent, is—

First. The combination of the rifling knife, K, (connected with the main driver, I, by means of the elastic arms, L, L,) with the inclined planes, M, M, placed upon the rails, J, J, as described, for the purpose of enabling the knife to be carried forwards under the block during the forward movement of the said driver, and then be elevated to the proper height to split off a shingle during its return movement, substantially as herein set forth.

I also claim the arrangement of secondary driver, N, placed above and acting independently of the main driver, I, in such a manner that it will drive the rived shingle from under the block, and deposite it upon the bed, O, forward of the main driver, in such a position that it will be carried forwards to be dressed during the forward movement of the said driver, substantially as set forth.

WILLIAM STODDARD.

No. 9457.—*Improved Screw-Driver.*

What I claim as my invention, and desire to secure by letters patent, is the screw-driver, E, spring catches, F, F, attached to the flat portions of the screw driver, and permitting longitudinal as well as lateral adjustment, and the barrel, C, in which the whole is placed, in combination with the brace and stock, A, B, or their equivalents; the whole being constructed and arranged, and operating in the manner and for the purpose substantially as herein set forth.

J. W. SWITZER.

No. 9458.—*Improvement in Reels for Harvesters.*

What we claim as our invention, and desire to secure by letters patent, is extending the axle of the driving wheels so far beyond the carriage as may be necessary to form a pivot for the reel to turn upon, and allow of its rotation by a band, as described, independent of the rotation of the axle, substantially as set forth.

WARREN W. WRIGHT.
CLARK C. WRIGHT.

No. 9459.—*Improvement in utilizing Slags of Furnaces.*

What I claim as my invention, and desire to secure by letters patent, so as to have the exclusive right therein, is the process of utilizing the slags of iron and other like furnaces, refining and working the same, substantially in the manner and for the purposes set forth in the specification, whereby I bring into successful operation, for useful purposes, a class of hitherto useless products.

WILLIAM H. SMITH.

No. 9460.—*Improvements in Machinery for making Wood Screws, &c.*

Having thus described my improved machinery for the manufacture of screws, what I claim therein as new, and desire to secure by letters patent, is—

First. The feeder, composed of a sectional trough, with a close bottom and open top, into which the blank drops and arranges itself, before a traversing rod, which pushes it into the gripping jaws, substantially as described.

Second. The combination of the traversing rod, actuated substantially as described, with an adjustable stop, for the purpose of setting the blank between the jaws in the exact position required, as herein set forth.

Third. The method of operating the jaws and holding them closed with the requisite force to hold the blank firmly between them without end strain upon the mandrel by means of toggle or knuckle joint levers, which are thrown slightly past centres, when the jaws are closed, to hold them closed when they are used in connexion with elastic and long shank nippers, substantially as herein described, whereby all end strain of the mandrel against its bearings is prevented during and by the gripping and holding of the blank.

Lastly, I claim the spring discharging punch, constructed and arranged in such manner that the same shall be compressed by the entrance of the blank between the gripping jaws, and shall throw the blank out of the jaws the instant they relax their hold of it sufficiently; such pushing out depending upon such relaxation and the force of the spring, and being entirely independent of the motion of any other part of the machine.

CULLEN WHIPPLE.

No. 9461.—*Improvement in Lining for Iron Safes, &c.*

What I claim as my invention, and desire to secure by letters patent, is the application of amorphous zinc oxide as a lining for safes and re-

frigerators and as a covering for steam pipes, steam chambers, locomotive boilers, hot-air flues and chambers, in such manner as to prevent the transmission or conduction of caloric into or from such chambers or flues.

WM. P. BLAKE.

No. 9462.—*Improvement in Trip-Hammers.*

What we claim as our invention, and desire to secure by letters patent, is the employment of the peculiar-shaped movable tappets, D, D¹, of different sizes; the said tappets being arranged loosely on the driving shaft, F, and moved back and forth, or one substituted for the other by means of the lever, G, in combination with the hammer, B, having a rectangular notched or peculiarly formed slot, C, cut in it; the whole being constructed, arranged, and operated in the manner and for the purpose herein described.

We likewise claim so arranging the lever, G, that when the large or small "tappets" are moved from one position to the other, or the small tappet made to occupy the place of the large one, the controlling spring, H, will also be operated upon and made to assume a proper position to suit the size of the "tappet," the arrangement for effecting this object consisting of a hook-shaped shifter, I, and movable collar, J, which are constructed, arranged, and operated in the manner substantially as herein set forth.

JAMES C. FORREST.
GEORGE BAKER.

No. 9463.—*Improvement in Field Rollers for Cutting Stalks and Weeds.*

Having thus described the nature and operation of my invention, what I claim as new, and desire to secure by letters patent, is the employment or use of the knife roller, said knives being either of straight or spiral form, in combination with the pins, F, F', and fork, G, the knives, as the machine moves along, cutting the stalks from the roots, and also the stalks into pieces while lying upon the ground, and the pins and prongs of the fork drawing the stalks within range of the knives, as herein specified.

JOSEPH H. GEST.

No. 9464.—*Improvement in the manufacture of Ball Castors.*

I claim the improvement in making the case of the ball castor, viz: of a combination of two halves or parts, *m*, *n*, the curved lip, *o*, and the ring, *s*, as constructed and applied together, and to the leg or socket-ferule thereof, substantially in manner and for the purpose as above set forth.

R. HINTON.

No. 9465.—*Improvement in Stone Picks.*

What I claim as my invention, and desire to secure by letters patent, is the addition of a guard to the inner side of the hammer of mill-stone

picks, which guard will intercept the chips of stone, and protect the hand and person of the picker, using for that purpose the metallic guard above described, or any other substantially the same, and which will accomplish the same result.

I do not claim as my invention the mode of constructing the pick as described, in other respects than as pertains to the guard.

JOSEPH U. HOUSTON.

No. 9466.—*Improvement in Buckets for Endless Chain Pumps.*

What I claim as my invention, and desire to secure by letters patent, is the globular, elastic, and adjustable bucket for chain pumps, constructed substantially in the manner and for the purpose herein set forth.

CLARK POLLEY.

No. 9467.—*Improvement in Apparatus for Treatment of Fractures.*

Having thus fully described my invention, I will proceed to state what I claim, and desire to secure by letters patent:

I claim—First. The hip brace, I, of semi-circular or nearly semi-circular form, and the strap, J, passing over it and around the limb, the said strap and brace operating as and for the purpose substantially as set forth.

I claim—Second. The knee fork, F, attached either to the upper part, A¹, or lower part, A, of the double inclined plane, for the purpose of attaching a band which clasps the limb, to effect extension or counter-extension at the knee, as herein explained.

I claim—Third. The application of the adjustable braces, L, L, to the crests of the ilium, substantially as and for the purpose described; the said braces being attached to a seat piece, K, or its equivalent.

I claim—Fourth. The seat, K, in combination with an adjustable back piece, N, attached to two double inclined planes, substantially as herein described, for the purpose of moving the cripple without changing the adjustment of the splints, for the purpose set forth.

ZIMRI HUSSEY.

No. 9468.—*Improvement in Seed Planters.*

What I claim as my improvements, and desire to secure by letters patent, is—

First. The construction of the compound grain slide, e, fig. 7, as described, by which the amount of grain required to be sown is graduated at pleasure, as herein fully set forth.

Second. The mitre bar, E, constructed as described, to raise the apparatus for lifting the drill teeth, and throwing the slides out of gear, completely out of the way of the operator, thus allowing him to get at the drill teeth, for the purpose of clearing them of obstructions, with a facility altogether unknown in machines constructed with a horizontal bar in the rear.

HENRY NYCUM

No. 9469.—*Improvement in Scythe Snaths.*

What we claim as our invention, and desire to secure by letters patent as a new manufacture, is a scythe or cradle snath composed of a wrought metal tube, which possesses the advantages of great durability and facility of being bent into any desired form without increasing its ordinary weight, or impairing its usual strength and firmness.

We also claim the longitudinal rib, *e*, or its equivalent, on the snath, in combination with a series of notches in the ring of the neb, for the purpose of adjusting the nebs securely upon the snath, substantially as herein set forth.

ABRAM CLOW.
CHARLES CLOW.
CHAS. N. CLOW.

No. 9470.—*Improvement in Straw Cutters.*

What I claim as my invention, and desire to secure by letters patent, is, in combination with the rake and spring, the pressure piece (*m*) and the roller, (*K*), constructed and arranged in the manner and for the purpose as herein before set forth.

JOEL DAWSON.

No. 9471 — *Improvements in Machinery for Forging Metals, &c.*

Having thus described my machine for forging metals, what I claim therein specifically is—

First. The mandrel, or its equivalent, for chucking or griping the metal to be forged, and holding the same in the proper position, and from time to time changing its position between the reciprocating rollers, in combination with reciprocating rollers for shaping the metal so held, whose action upon the metal is regulated by a pattern guide, substantially as herein set forth.

Second. The method of regulating the thickness and shape of the metal being forged without stopping the rollers, or withdrawing the metal therefrom, by the simultaneous adjustment of the pattern guides, substantially as herein described.

WILLIAM FIELD.

No. 9472.—*Improvement in Apparatus for the cure of Club Feet.*

Having thus fully described the nature, construction, and operation of my invention, I will proceed to state what I claim, and desire to secure by letters patent:

I claim the side pieces, *A, A*, to which are attached the adjustable foot pieces, connected and adjustable to each other, in the manner substantially as described, by the back piece, *B*, plates, *a, a*, and *c, c*, bolts, *b, b*, and *d*, and slots, *b*¹, *b*¹, and *d*¹.

ZIMRI HUSSEY.

No. 9173.—*Improvement in Plough Regulators.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the arms, D and E, with the connecting and regulating bar, I; the arms, D and E, and the connecting bar, I, forming an arch, and working on an axle which passes through the beam, in the manner and for the purpose substantially as herein described and set forth.

HARVEY SPRAGUE.

No. 9474.—*Improvement in Spike Machines.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the hinged pointing die, (E,) pressed forward by a spring, with the guard or stop, (a,) or the equivalent thereof, which guides the die and limits its forward movement, substantially as herein set forth.

PHILIP P. TRAYSER.

No. 9475.—*Improvement in Seed Planters.*

What I claim as new and as my own invention, and desire to secure by letters patent, is the reciprocating bar, B, having wings, b^2 , b^3 , projecting horizontally and obliquely on the front and rear sides of the same, to scoop the seeds in the discharge apertures, arranged and operating in the manner and for the purpose above specified.

MOSES D. WELLS.

No. 9476.—*Improvement in Grain and Grass Harvesters.*

Having thus described my improved harvesting machine, what I claim as my invention, and desire to secure by letters patent, is the method herein described of supporting the stand for the raker, at the back of the platform, by means of a brace, extending to the outer end of the frame, and so arranged as not to impede the action of the raker, or the discharge of the cut grain; the several parts being constructed and arranged as described.

I also claim the method herein described of protecting the gearing of the machine from injury, by the working and twisting of the main frame, by mounting the said gearing in a supplementary metallic frame, constructed as described, and rigidly connected to one end of the main frame, upon which it is mounted, as herein set forth.

WILLIAM H. SEYMOUR.

No. 9477.—*Mechanism for pointing and threading Screw-blanks in the same Machine.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of the pointing and chasing tools on the same tool-holder in such manner that they are operated by a common motion, substantially as herein set forth.

CULLEN WHIPPLE.

No. 9478.—*Improvement in Machines for cutting Whale Blubber.*

I am aware that in machines for cutting straw, or such like matters, a cutting cylinder has been made to operate on a bed roller, and that the knives on the said cutting cylinder have been arranged in a helix upon it. It is not claimed that such constitutes in any respect the invention of the said Ricketson, deceased.

But what is claimed is the wheel composed of two or more spiral knives, made to rotate on an axis, arranged parallel, and in the direction of movement of the strip of blubber to be cut, all substantially as above set forth, meaning to claim two or more spiral knives formed, arranged and made to operate with respect to and in combination with a set of bed and feed rollers, substantially in the manner and for the purpose of cutting blubber substantially as above described.

LYDORIANN RICKETSON.

No. 9479.—*Improvement in Rakes to Grain Harvesters.*

Having thus described my invention, I desire to state that I do not confine myself to the exact mechanical devices and arrangements shown and described for operating the rake, as these may be modified or others substituted for them. What I claim, and desire to secure by letters patent, is the exclusive use of the herein-described combination of the crane post, (c^1), rock shaft, (h^1), and crank, (l^1), to operate the jointed arm, (a^1 , d^1), and hands, (D^1 , E^1), which collect the grain in gavels and deposit it in rear of the harvester, in the manner specified, as the machine moves forward, when applied to machines for harvesting any grain which requires to be so collected and deposited; the combination being connected by gearing with the driving wheel of the harvester, and operating through mechanical devices, substantially as described, as an automaton to perform the above-specified operation.

JEARUM ATKINS.

No. 9480.—*Improvement in Water Closets.*

I do not claim any of the parts of the pan, basin, or hopper, as these may be of any desired character, and, if used with the hopper closet without a pan, the part which moves the pan, r , may be dispensed with; what I desire to secure by letters patent, is the cylinder, n , and plunger, 18 , by which the force of the water is made to raise the lever, S , depressing and emptying the pan, r , as described and shown.

WILLIAM S. CARR.

No. 9481.—*Improvement in Ventilators.*

Having thus described my improved ventilator, and the method of operating the same, I wish it to be understood that I do not claim a ventilator with slats or shutters fixed in the sides of a cupola or dome, or other structure, placed on the top of the building or elsewhere; but what I do claim as my invention, and desire to secure by letters patent, is the arrangement of the frame, E , in the sides of the cupola or dome, projecting slightly beyond the face thereof, to admit the lips or turned ends of the

slats or shutters to lap over the same, in order to form tight joints, and the manner of hinging or jointing the slats or shutters to the same by the joint pins, G.

I likewise claim the radial wings, K, when combined with the frame of the dome or cupola, for directing the currents of air to the spaces between the slats or shutters, as described, and thence to the trunk.

A. S. DOZIER.

No. 9482.—*Improvement in Straw Cutters.*

What I claim as my invention, and desire to secure by letters patent, is constructing the rotating cutting cylinder, substantially as described, with a series of parallel annular grooves and ridges, and a series of cutting arms or knives, in combination with a series of fixed knives, so arranged that they enter the grooves and interlock or lap past the annular ridges on the cylinder, and thereby prevent the stalks of straw, &c., from descending between the fixed knives and cylinder without being cut, substantially as herein set forth.

WARREN GALE.

No. 9483.—*Improvement in Ploughs.*

Having thus described my improvement in the cotton scraper, what I claim as my invention, and desire to secure by letters patent, is the rhomboidal plate, *c, d*, bent on one of its diagonals, and constructed and arranged substantially as described, so that either leaf can be used as a landside or share, at pleasure; the edges of the share becoming, when the plate is reversed, the edges of the landside, and those of the landside the edges of the share, in the manner and for the purposes specified.

I also claim, in combination with the plate, *c, d*, as described, the double bifurcated brace, *f, g, h, i, j*, for attaching said plate to the beam, substantially as described.

WM. A. GATES.

No. 9484.—*Improvements in machinery for manufacturing Hat Bodies.*

I do not claim the conical vibrating rollers, for the purpose of felting or compressing a bat, or the cone separately, as that is well known; but I claim combining the hardening rollers with the perforated cone, by means of a yielding or hinged frame, in which they are placed, substantially in the manner and for the purpose herein described.

I also claim giving to said rollers, in combination with said perforated cone, a vibrating endwise motion, as well as a rotary motion, substantially as described, and for the purpose set forth.

I also claim blowing the exhaust air from the former, *f*, into the chamber, *d*, for the purpose and in the manner described.

And I also claim the mode of forming the steam-pipe outlet, as above specified, by covering the steam pipe with cloth, and incasing it with an outer metal case.

I also claim covering the perforated cone, preparatory to a deposition of fur thereon, with a covering of thin cloth, easily pervious to air, upon

which the fur is to be deposited—said cloth or fabric to be removed at each operation, with the hat body deposited thereon.

LANSING E. HOPKINS.

No. 9485.—*Improvement in Grain Threshers and Cleaners.*

Having thus described the construction and operation of our machine, what we claim as our invention, and desire to secure by letters patent, is the combination of the upright threshing and separating cylinders with the upright concave and cylindrical sieves, operating in the manner and for the purpose as herein set forth.

JOHN JONES.
ALEXANDER LYLE.

No. 9486.—*Improved Equalizing Apparatus for Engines which use steam expansively.*

Having thus described the nature of my method of equalizing the action of steam, I claim therein as new and of my invention, and desire to secure by letters patent, the application to a reciprocating engine (in which the steam is used expansively) of the described, or equivalent, toggle movement, in combination with a pair of equalizing cylinders, which being placed at a greater or less distance, (one on each side of the mid-range of the toggle,) the most rapid accumulation of equalizing force is made to take place earlier or later in the stroke, in accordance with the period of cut-off, &c., for the purposes herein explained.

WM. HENRY MORRISON.

No. 9487.—*Improvement in Maize Harvesters.*

Having described my improvement, what I claim as my invention, and desire to secure by letters patent, is the arrangement of the shaft of the receiving arms, K, with one end resting upon the cutter bar piece, thereby dispensing with an intermediate platform, so that the cut stalks will fall directly upon the receiving arms, K, and be thence discharged in bundles upon the ground, as set forth.

JACOB L. REAM.

No. 9488.—*Cut-Off Valve-Motion.*

Having thus fully described my invention, I do not claim placing the cut-off valve outside of the slide valve, and operating both valves by one rod or eccentric. But I do claim the lugs acting upon the hinged levers, attached at their lower extremities to the cut-off slide, and at their upper to a rod capable of a vibratory movement in a direction perpendicular to the valve seat, substantially for the purpose and in the manner set forth.

S. W. ROGERS.

No. 9489.—*Improvement in Potato Diggers.*

Having thus fully described my invention, what I claim, and desire to secure by letters patent, is the construction of a potato-digger, by the combined arrangement of the knife, *d*, wheel, *c*, and fork, *e*, with the beam, *a*, operating substantially as and in the manner set forth.

JESSE N. SEELEY.

No. 9490.—*Improvement in Lamps for Locomotive Engines*

What we claim as our invention, and desire to secure by letters patent, is—

First. The construction of a feeder for supplying oil to the holder, by the combination of two tubes—one communicating with the interior of the reservoir, and the other fastened to a float immersed in the oil of the holder, by which the lamp is rendered self-feeding, in the manner and for the purposes herein specified.

Second. The construction of the chimney, with a broad, flat flue connecting its vertical portions, the exterior one of which is so constructed as to be forward, or on either side, of the prolongation of the chimney of the burner, substantially in the manner and for the purposes herein specified.

THOS. SNOOK.
STEPHEN HILL.

No. 9491.—*Improvement in the manufacture of Chromate of Soda.*

Having described the nature of my invention, and the manner in which the same is to be performed, I hereby declare that I claim as my invention, the process of manufacturing the chromate of soda.

JOHN SWINDELLS.

No. 9492.—*Improvement in Fulling Mills.*

What I claim, and desire to secure by letters patent, is the combination of the stop mechanism, or its equivalent, with the screw, pulley, and the elastic band leading to the pulley on the upper roller, whereby the whole machine is stopped, when the motion of the cloth is arrested in the manner described, and ceases to impart motion to the upper roller.

W. E. UNDERWOOD.

No. 9493.—*Machinery for separating Iron from Furnace Cinder.*

What we claim, and desire to secure by letters patent, is the combination of the revolving breaking and sifting cylinder with the fan, or its equivalent, substantially in the manner and for the purposes specified.

DANIEL WALROTH.
LUCIUS EVANS.

No. 9494.—*Improvement in Steam Flat Irons.*

Having thus explained my invention, I would have it understood that I claim the steam ball and socket smoothing iron as made of a combina-

tion of a spherical socketed smoothing block, F, and a hollow or chambered sphere, A, with induction and eduction passages, C, D, arranged so as to admit steam and discharge condensed water, all substantially as herein-before set forth; the block, F, being applied to the sphere, A, in such manner that it may be moved thereon in various directions transversely, while passing over and against a hat or surface to be smoothed, as specified.

C. C. WALWORTH.

No. 9495.—*Improvement in Planing Machines.*

Having thus described my invention and improvement in machines for planing, tonguing, and grooving boards, I disclaim the invention of planing by a reciprocating plane, which planes on its forward stroke and feeds the board on its backward stroke the whole distance of the stroke of the plane, as in other machines of this class; but what I do claim is the reciprocating beds arranged with respect to the stationary bed, substantially as described, in combination with the clamps, or their equivalents, attached to the plane stock, whereby the board is clamped between said movable beds and the clamps, and is free to move over the stationary planing bed, and is fed during the backward stroke of the plane the whole length of such stroke.

ARETUS A. WILDER.

No. 9496.—*Improvement in the method of Measuring Cloth on the Cloth Beam.*

What I claim as my invention, and desire to secure by letters patent, is connecting or attaching a measuring cord (constructed as described) to the cloth, so as to be wound on the cloth beam with it, in order to indicate the length of the "cut" required.

WILLIAM H. WOODWORTH.

No. 9497.—*Improved Safety Lock.*

First. I claim, in combination with the tumblers, or their equivalents, constructed and connected respectively to stops, in the manner, or in an equivalent manner to that described in the specification, and shown in the drawings at *j*, the spring, *n*; the same being an additional device co-operating with the said tumblers and springs connected therewith in rendering the movements and positions of the stops to the highest degree uncertain when an attempt is made to unlock the lock without using the proper key.

Secondly. I claim the wheel, C, and the lever, F, in combination with the tumblers, *h, h, h*, constructed as before described, or their equivalents, to raise, while in one position, and support the tumblers, O, O, that the key hole shall be equal and smooth to receive the key, and then allow them to be stopped at proper heights on the key while a revolution is performed and the bolt moved by the wheel, substantially as described.

LINUS YALE, JR.

No. 9498.—*Improved Parrel for Yards of Vessels.*

I do not claim the rocker simply and by itself as my invention, a saddle or slide having been heretofore used and fastened into the swallow-tail of the gaff and boom of sailing vessels, applicable to fore and aft sails only; but what I do claim as my invention, and desire to secure by letters patent, is the combination of the rocker in front of the mast, and capable of a motion in two planes, with the rockers at the side of the same; said rockers being arranged with respect to each other and the yoke, substantially as described.

DANIEL S. BAYLES.

No. 9499.—*Improvements in the method of obtaining Gold, &c., by Amalgamation.*

Having thus described our improved method of separating precious metals from their ores by amalgamation, what we claim as new therein, and desire to secure by letters patent, is the bringing of the ore in a heated state into contact with mercury during the process, substantially as herein set forth.

We also claim the method of heating pulverized ore by causing it to pass in a shower through a current of some heated fluid preparatory to bringing it into contact with the mercury, substantially as herein set forth.

We also claim the method of heating the apparatus, the mercury, and the ore, by means of a current of heated fluid, circulated through chambers and pipes, substantially as described, whereby a single current of a suitably heated fluid, and a single system of circulating pipes, of simple construction, and compact arrangement, are made to heat the whole of the apparatus that requires to be heated, and to heat the ore in the process of feeding, and the mercury in the process of amalgamating, substantially as specified.

MAYBURY A. BERTOLET.
LEWIS KIRK.
A. M. DE HART.No. 9500.—*Improvement in Winnowing Machines.*

Having described my improvement in grain winnowers, what I claim as my invention, and desire to secure by letters patent, is the combination of the piston, *k*, rack rod, *l*, pinion, *m*, valves, *i*, *i*¹, and eccentric pulley, *n*, in connexion with a conducting chest, *g*, and blower, *f*¹, for the automatic graduation or government of the blast through the spouts, *q*, *r*, of a winnowing machine, arranged and operating in the manner and for the purpose set forth.

SAM'L CANBY.

No. 9501.—*Improvement in the process of making Illuminating Gas.*

What we claim as our invention, and desire to secure by letters patent from the United States of America, is the combination of woody and fatty substances in gas generators, as described, so that the excess of hydrogen in the former may combine with the excess of carbon in the

latter, and produce a rich carburetted gas of any required density, and free from sulphurous fumes.

G. DANRÉ.
PASCAL NICHOLAS.
FELIX LOPEZ.

No. 9502.—*Improvement in Temples for Looms.*

Having thus described our improved weavers' temple, what we claim as new therein, and desire to secure by letters patent, is the arrangement of parts so that the temples have a reciprocating action corresponding with the motion given to the cloth by the beat of the lay, substantially as herein set forth.

ELIHU DUTCHER.
WARREN W. DUTCHER.

No. 9503.—*Improvement in Cutting Paper.*

Having thus described the elements of the combination invented by me, and explained the mechanism I have adopted for putting them in action, in the manner as herein before specified, I would remark that I do not intend to confine my invention to the precise form or arrangement of its parts as represented in the drawings, but intend to vary the same to any extent, while I do not change the character of the machine.

What I claim is the combination of a press, or its equivalent, for holding the book or paper to be cut, with one or more cutters or knives for trimming the front or edge, and one or more cutters for trimming one or both of the other edges of the book; the different sets of cutters being simultaneously operated while the paper or press is moved towards them, all substantially as above specified. And in combination with such cutters or knives for trimming one, or the front and other edge or edges of a book at one operation or time, I claim the improvement of combining with them, or either of them, one or more polishing surfaces, as described, or their equivalents, whereby the edges of the sheets or paper are cut and polished, or smoothed, ready for gilding, substantially as specified.

JOHN P. FARNUM.

No. 9504.—*Improved mode of mounting the Cutters of Machines for Planing Metals, &c.*

What I claim as my invention, and desire to secure by letters patent, is hanging the cutters to the stock by means of a joint pin, or its equivalent, whose axis is diagonal to the line of cutting motion, and in a plane parallel with the surface being cut, substantially as specified, for the purpose of relieving the cutting edge in two directions, as specified, when the cutter-stock is set perpendicular to the plane of the surface to be produced.

And I also claim combining together in one cutter-stock two cutters, hung substantially as specified, and with the angle of the axis of the two joint pins reversed, as specified, for the purpose of relieving both cutters from the two surfaces when cutting in both directions, as specified.

P. SAULNIER.

No. 9505.—*Improvement in Magnetic Printing Telegraph.*

What I claim as of my own invention, and desire to secure by letters patent, is—

First. The employment of electro-magnetic force, in combination with the force of a current of air or other fluid, so that the action of the former governs or controls the action of the latter, for the purpose described.

Second. I claim the construction of the electro-magnet as described—that is to say, a series of fixed magnets, in combination with a series of movable magnets, arranged upon a central axis, which axis plays between or through the line of fixed magnets, so as to effect a vibratory movement of said axis, by a force multiplied by the number of magnets of both kinds.

Third. I claim the combination of an electro-magnet with the valve for regulating and directing the force of a current of air, or other fluid, acting as a motive-power upon the piston, or other analogous device, for producing a vibratory motion, as described.

Fourth. I claim the endless band, in combination with the cylinder, K, as an inking machine for conveying and applying the coloring matter to the paper at the moment of receiving the impression from the types, as described.

Fifth. I claim the combination of the regulating bar (g^1) with the type-wheel, for the purpose of regulating the proper position said wheel should have, in connexion with a given position of the key-shaft, at the moment of printing any letters or characters.

ROYAL E. HOUSE.

No. 9506.—*Machinery for Heading Bolts, &c.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The combination of the stationary die, E, and die pivot, D, with the sliding hammers, G, actuated by the rotary grooved cams or cam collar, substantially as described, for the purpose set forth.

Second. The revolving ring or cam collar, provided with cams, or their equivalents, on its inner and outer surfaces, when arranged with radial compressing and sliding upsetting hammers, in the manner and for the purposes described.

EDWARD PAYE.

No. 9507.—*Improvement in Shuttles for Looms.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the elevator, g , the bent spring, D, the platform, b , and its recess, a , the passage, c , and the slot, d , as applied to the shuttle and cop spindle, and made to operate together, substantially in manner and for the purpose of causing the filling thread to be broken, so that no filling thread shall be woven into the warps under circumstances as herein before stated.

WILLIAM TUCKER.

No. 9508.—*Improved method of Heading Screw Blanks, Rivets, &c.*

What I claim as my invention, and desire to secure by letters patent, is, in combination with the swedge header and die plate, substantially as specified, the giving of a back or receding movement at the end of the heading operation to the follower against which the point of the rod rests during the heading operation, substantially as specified, that the rod or wire may be upset outside of the die, whilst resistance is made by the follower against the end of the rod, and then, as the follower retires, cause the part so upset to be gripped between the surface of the die and the swedge, to complete the form of the head, the surplus metal being thereby forced into the shank, as set forth.

WM. E. WARD.

No. 9509.—*Improved Safety Apparatus for Steam Boilers.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The safety chamber, B, and safety plate, E, combined with the boiler in any way, substantially as described, whereby the bursting of the plate by the too high pressure in the boiler causes the chamber to be filled, and the pressure in the boiler to be reduced, by the expansion of the steam.

Second. The plate, C, placed, substantially as described, between the boiler and the safety plate, E, having one or more small openings, *a*, through which the steam is allowed to pass to act on the safety plate and fill the safety chamber, whereby the water is prevented from priming or foaming and being carried up by the steam when the safety plate bursts.

HENRY WATERMAN.

No. 9510.—*Machinery for making Railroad Chairs.*

What we claim as our invention, and desire to secure by letters patent, is the movable cutter for making the cuts in the edges of the plate, substantially as described, in combination with the slides, which answer the purpose of stationary cutters, and rests, to effect the partial bending of the lips, and which afterwards complete the bending of the lips, substantially as described.

We also claim, in combination with the cutter, as described, the making of the mould or former to slide therein, for discharging the chair after it has been formed, as described.

And, finally, we claim the dies for upsetting and giving additional thickness to the lips, as described, in combination with the bending slides and cutter, substantially as described.

JOHN F. WINSLOW.
JOHN SNYDER.No. 9511.—*Improvement in Daguerreotyping.*

What I claim as my invention, and desire to secure by letters patent, is the producing ornamental borders and designs of different shades and forms, and singly or in numbers, around any photogenic image, by the

method of irregular chemicalization, combined with the use of pattern slides or chemical cut-offs; all of which is fully described in the detail of my process.

WILLIAM YARNALL.

PATENTS REISSUED DURING THE YEAR 1852.

No. 209.—*Improvement in Planing Machines.*

Having thus fully described our improved machine, we wish it to be understood we do not claim a bench that can be raised and lowered by set screws, or similar device. But what we do claim as our invention, is, first, hinging the bed piece at one end, and raising and lowering it at the other, in combination with the revolving cylindrical cutter, in the manner and for the purpose set forth.

We also claim the combination and moving of the feed rollers (*g*) with the stationary ones, by the oblique links and gear, as described; the whole being constructed and operating as above specified.

CHARLES A. SPRING.

PETER BOON.

No. 210.—*Improvement in Machines for Planing, Tonguing, and Grooving.*

What I claim as the invention of the aforesaid Joseph Powell, Nelson Barlow, and Edward Holden, and what I desire to secure by the reissue of the letters patent granted originally to them, is—

First. The combination of the pairs of feeding rollers, *G*, *G*, and *G*¹, *G*¹, with the bed plate, *C*, and the rotating reducing wheel, *D*, substantially in the manner and for the purpose herein set forth, viz: the placing the axles of the pair of feeding rollers, *G*, *G*, preceding the reducing cutter wheel, and the axles of the pair of feeding rollers, *G*¹, *G*¹, immediately following the same, respectively, out of a vertical line with each other, thereby bringing the upper roller of each pair nearer to the shaft of the reducing wheel than the lower one, for the purpose of springing the board or plank to the bed-plate, as herein more particularly described.

Second. In making the rebates by which the tongue is formed, I claim the employment of a series of incising cutters, in combination with stationary, planing, tonguing cutters; the several cutters being so arranged as to act upon both sides of the angle of the rebate simultaneously or alternately, and cut the shavings from both the said sides, so as to form at one operation a tongue, both of whose sides and shoulders have been subjected to the action of cutting edges, substantially as herein set forth.

Third. In forming the groove, I claim the employment of a series of incising cutters, in combination with stationary, planing, grooving cutters, substantially as described, for forming the tongue, being arranged so as to cut upon both sides and the bottom of the groove, as set forth.

ROBERT G. EUNSON,

Assignee of Joseph Powell, Nelson Barlow, and Edward Holden.

No. 211.—*Improvement in Machinery for Dressing Staves.*

What I claim as my invention, and desire to secure by letters patent, is—

First. The arrangement of the wheel and ring of cutters, for the purposes and in the manner substantially as herein-before described.

Second. The holding of the stave firmly in position to be dressed, in the immediate vicinity of that portion which is being cut, while all the other portions are left at full liberty to assume whatever position its configuration may indicate, for the purposes and in the manner substantially as herein before described.

Third. The employment of the two independent spring rollers, (*p* and *q*.) or their equivalent, acting with equal force upon each of the edges of the stave, irrespective of their relative thickness, in combination with the guides and the cutters, as described.

ISAAC JUDSON.

No. 212.—*Powder-Proof Lock.*

What I claim as my invention is the combination of the handle, shank and cam, one or more pins, *e*, *e*, &c., and their sustaining holes or apertures, in their application to the bolt and one or more tumblers, and as operated substantially as specified, meaning to claim said combination as composed of the afore-described elements and their accessories.

And I also claim to combine with, or in combination with, the bolt and tumblers, a contrivance for throwing or moving the bolt back and forth; another, or a key *separate* and distinct from each contrivance, and for the purpose of moving the tumblers into correct positions for the bolt to be moved, and which shall be perfectly stationary after it has so moved the tumblers; and a movable plate, or its equivalent, applied to the contrivance by which the bolt is actuated, and made to entirely cover the key and prevent access to it when the bolt is put in motion: not meaning by the above to claim the separate combination of either of the above-mentioned three parts with the bolt and tumblers, but intending to limit my claim to the combination of all of them therewith, so as to operate in conjunction with them, essentially as specified.

WM. HALL.

No. 213.—*Improvement in the Gearing of a Seed Planter*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is in combination with the slotted sliding seed-bar, *F*, the stationary lugs, *b*, *b*, on the plate, *D*, and the concave, *c*, *c*, on the cap, *G*, *G*; the whole being arranged and constructed as herein described.

I also claim the combination and arrangement of the double bolt, *h*, with its slotted arm, *k*, rock shaft, *n*, with its arms, *m* and *p*, and pitman, *g*, for the double purpose of giving motion to the feeding apparatus, and also regulating the quantity of seed to be sown, when said pitman is operated by a long crank upon which it travels, as herein fully shown and represented.

MARSHALL J. HUNT.

No. 214.—*Improvement in the construction of Furnaces for Smelting Iron Ore.*

Having described the construction and operation of my improved furnace for smelting ores and metals, I will now state what I claim as my invention and improvement, and desire to secure by letters patent:

First. I do not claim the increasing of the draught as separately by itself.

Second. And I do not claim to generate steam, or to heat the blast by waste heat, otherwise than hereafter claimed. I therefore only claim as my invention and improvements the arrangement of the fire-chambers, opening each, by a flue, into one horizontal flue, in combination with the boiler placed in said flue for generating steam, and the pipes, I, I, therein, as a means of heating the blast; the whole being constructed and operating as described.

J. AUGUSTUS ROTH.

No. 215.—*Improvement in Washing Apparatus.*

Having thus fully described my invention, what I claim therein as new, and desire to secure by letters patent, is placing the rotary boiler for washing clothes immediately over the fire, and so combining with it a reservoir or top boiler that said rotary boiler shall form the lower half of the flue whilst the said reservoir or boiler shall form the upper half of said flue, and from which the revolving boiler may be supplied with water and thus greatly economize heat, substantially in the manner herein described and represented.

I also claim, in combination with the rotary boiler and shielded stationary pipe, the top reservoir or boiler for receiving the excess of steam from the boiler and heating the water therein; and this I claim whether said reservoir is divided by partitions or not; the whole being arranged in the manner and for the purpose herein described.

JAMES T. KING.

No. 216.—*Improvement in Self-detaching Brakes.*

What I claim as my invention, and desire to secure by letters patent, in combination with the method of forcing the brakes against the wheels by connecting the brakes, or the mechanism which works them, with the bumpers or draw-bars, substantially as specified, is the method, substantially as specified, of releasing the brakes, notwithstanding the continuance of the forces by which they were applied, by the reversing action of the wheels on the brakes, to effect a disengagement of the pressing force, as described.

As one of the devices for applying the principle of my invention, I also claim connecting, by means of a detachable catch or hook, substantially as specified, the bumper or draw-bar with the lever, or its equivalent, which forces and holds the brake against the wheel, substantially as specified, so that, notwithstanding the continuance of the backward pressure on the said bumper or draw-bar, the connexion can be readily broken to relieve the brake, and thus leave the wheel free to run, as specified.

And I also claim making that part of the brake which acts directly on the wheel separate from, but so connected with as to slide freely on the part which receives the action of the mechanism for forcing the brake against the wheel, substantially as described; by means of which, on reversing the motion of the wheel, the one part of the brake in contact therewith is made to slide to give the required motion for effecting the disengagement, as above specified.

JOHN LAHAYE.

No. 217.—*Improvement in Apparatus for Parti-coloring Yarn.*

What I claim as my invention, and desire to secure by letters patent, is the method, substantially as specified, of parti-coloring yarns that have been reeled by direct and free immersion by means of frames carrying the reeled yarns, and combined with the vat containing the dyeing liquor, by means of machinery adapted to let down and draw up the said frame, and measure the extent of immersion, substantially as set forth.

I also claim connecting one or both of the reels in each frame by means of slides, to admit of removing the reels from contact with the yarns whilst in the process of dyeing, substantially as specified.

ALEXANDER SMITH.

No. 218.—*Improvement in the Machine for Cutting Paper and Trimming Books.*

What I claim as my invention is the use of a knife having a lateral or end vibratory motion, for the purpose of cutting the edges of books, papers, &c., and its combination with the frame, F, and rods, P, P, or either of them, and operated by cams or other equivalent devices, to give a drawing and vibratory cutting action to the knife, substantially as set forth.

I claim also the mechanical construction of the press as arranged and combined with the parts for cutting and pressing, thereby forming an entire machine for the purpose described.

FREDERICK J. AUSTIN.

No. 219.—*Improvement in Batting of Cotton or other Fibrous Material.*

Be it distinctly known that we do not claim as our invention the mode of operating a series of carding machines to make "batting," as shown by J. Essex's drawings, nor any part of the above-described machine. What we do claim as our invention and discovery is the method of making "batting or wadding" by laying on and covering both the upper and lower surfaces of a sheet or sheets of cotton, wool, hair, or other elastic fibrous material that has been merely well picked, cleaned, and spread with layers of carded, condensed, and compact fibres, such as cotton, wool, hemp, &c., for the purpose of rendering the same smooth, strong, and more suitable for bedding, wadding, and upholstery uses.

HAMILTON B. LAWTON.
HIRAM T. LAWTON.

No. 220.—*Improvement in Bedsteads.*

I lay no claim to a combination of rest-bars or boards, spiral or wound wire springs, a sacking and closing frame used to support a cushion or mattress, such a combination having been employed in the manufacture of sofas and other articles of furniture; but what I claim as my invention is the method in which I construct the foundation of the bed or mattress by means of the above-described pliances, or their equivalents, to wit: the lacing and the clamps and keys, or wedges, so as to render the bedstead portable by being taken apart, or enfolded the one part over the other, or united together or unfolded, as above described, as occasion may require: that is to say, I claim the combination of the two frames or halves of a box, each of said frames or halves consisting of a side, two ends, and bottom or slats supporting wire springs, and a sacking affixed to its side and two ends, and supported on springs or stuffing, as occasion may require, and these halves or parts so united, that when together or unfolded they form but one box or frame, supporting or holding fast the sacking at its entire extremity without any separating or supporting partition in the centre; and this union or junction of the two posts is effected by the above-described lacing, or its equivalent, and clamps and keys, or wedges, or their equivalent.

I lay no claim to any one of the elements of the aforesaid or above-described combinations when separate from the rest, but intend only to claim the whole as combinations constituting a bedstead, or foundation for a bed or mattress, to which the parts, as above described, or their equivalents, may be applied, as aforesaid.

NATH'L COLVER.

No. 221.—*Improvement in Machines for Tonguing Boards.*

I am aware that Harvey Law has described in his patent of 10th April, 1849, a mode of tonguing in which two sets of saws are arranged in a frame with the cutting teeth opposite, and cutting in one plane on opposite faces of the board, none of which devices we desire to claim; but what I do claim as the invention of Crosby and Edgcomb, is the employment of two *independent* sets of *independent* cutters, arranged in parallel planes in parallel stocks, with an open space between them, so as to cut on the *edge* of the board, all in the manner substantially as described, whereby I have the advantage combined of freedom from clogging, and the facilities of adjusting the stocks and cutters for sharpening, setting, and inspection.

RAMSOM CROSBY, JR.

No. 222.—*Improvement in the Manufacture of Bullets, &c.*

I do not therefore claim as of my invention casting bullets, buckles, and other articles, in a series of moulds moving under a spout when the surface on which the lead is poured is unbroken; nor do I wish to limit myself to the precise construction of moulds, nor to the special arrangement of them, so long as the same results are produced by equivalent means. But what I claim as my invention, and desire to secure by letters patent, in the method of casting bullets, &c., in a succession of

connected moulds, is jointing them together, so that they shall separate and come together in vertical planes, at right angles to the line of motion of the series, or nearly so, substantially as and for the purpose specified.

GEO. W. CAMPBELL.

No. 223.—*Improvement in making Lampblack.*

What I claim as my invention and improvement, and desire to secure by letters patent, is the mode herein described of burning lampblack—that is to say, burning it in a confined building or room without chimney or draught, substantially in the manner set forth in the above specification.

G. MINI,

Signature of John Gilbert Mini.

No. 224.—*Improvement in the Seeding Apparatus of Seed Planters.*

Having thus fully described my improvements in seeding machines, I wish it to be understood that I do not claim a reciprocating gauge-plate having apertures parallel and corresponding with apertures in the bottom of the hopper, as this I am aware is in use in other machines. But what I do claim as my invention, and desire to secure by letters patent, is the employment of a reciprocating gauge-plate, when provided with feeding apertures, in combination with corresponding apertures in the hopper bottom, which have their sides oblique to the sides of the apertures in the said reciprocating plate, and when combined with a device for giving it a variable reciprocating motion, for the purpose of sowing the seed constantly and uniformly, and varying the amount at pleasure, while the machine is moving, by simply varying the extent of its reciprocating motion, as herein described.

I also claim the pivoted rod, *m*, and the vibratory lever, *p*, which is provided with apertures arranged in the arc of a circle, whose centre is at the pivoted end of the rod, *m*, in combination with the curved or undulating disk, *s*, and the gauge-plate, *j*, substantially as herein described, for the purpose of imparting to the gauge-plate a reciprocating motion, which may be varied at pleasure by the operator, by inserting the rod, *m*, in one or another of the apertures in the lever, *p*, at different distances from its fulcrum.

LEWIS MOORE.

No. 225.—*Improvement in Steam Boilers and Apparatus to be used on board of Steamboats to prevent the explosion of boilers.*

Having described my invention, and some of its advantages, I would say that I do not claim the use of an alloy to allow steam to escape through the opening in the boiler caused by its fusion. But I do claim as my invention, and desire to secure by letters patent, the combination of a fusible alloy confined in a cup, tube, or case, with a metallic stem, rod, or other fixture not fusible at the melting temperature of the alloy, which stem, rod, or other fixture is held or kept in position, whilst the alloy remains hard; but when said alloy is fused, said stem, or its equivalent, can move or have motion; by which liberty to move, any valve

may be liberated, or caused to open and let steam escape, or any alarm may be let off, or any index moved, so that this combination may act as an alarm indicator or safety apparatus.

I also claim, in combination with said alloy and plug, the heavy slotted weight, the lever, C, or its equivalent, and the safety or escape valve, and its ordinary weight, acting in the manner and for the purposes herein described.

C. EVANS.

No. 226.—*Improvement in Cream Freezers.*

What I claim as my invention, and desire to secure by letters patent, is the arrangement of scrapers, t^1 and u , at an angle with the bottom and sides of the vessel, as described, so that the action of the rotation shall throw the scrapers against the sides and bottom of the vessel.

E. C. SEAMAN.

No. 227.—*Improvement in Welding Cast-Iron to malleable Iron or Steel.*

Having thus fully described the nature of our improvement, what we claim therein as new, and for which we desire to secure letters patent, is uniting the steel and cast iron, as described, by first preparing the steel in the manner set forth, and then causing the cast-iron to flow over and upon the surface of the steel thus prepared, substantially in the manner and for the purpose above set forth.

M. FISHER.

JOHN H. NORRIS.

No. 228.—*Improvement in Reaping Machines.*

Having thus fully described my invention, what I claim, and desire to secure by letters patent, is the crooked arm or coupling piece, separate or in combination with the cutter-bar, whether both be composed of one, two, or more pieces.

I also claim attaching, supporting, and sustaining said cutter bar to the frame, relatively to the driving wheel, substantially as herein described and represented in fig. 2, and for the purpose set forth.

I also claim the endless chain sickled-edged cutter, in combination with the pulleys and rack-teeth, arranged and operating substantially in the manner and for the purpose set forth.

WM. F. KETCHUM.

DESIGNS.

No. 431.—*Designs for Stoves.*

What we claim as new and of our invention, and desire to secure by letters patent, is the design or ornament, shape, and configuration of stove plates as represented in the annexed drawings at D, E, F, figs. 1, 2, 3.

JAMES G. ABBOTT.
ARCHILUS LAWRENCE.

No. 432.—*Design for Stoves.*

What we claim as new, and desire to secure by letters patent, is the design and configuration of ornamental stove plates, substantially as described and represented at A, B, C, D, E, F, G, H, I, J, of the accompanying drawings.

JAS. G. ABBOTT.
ARCHILUS LAWRENCE.

No. 433.—*Design for Stoves.*

What I claim, and desire to secure by letters patent, is the design and configuration of ornaments, arranged and combined substantially the same as represented.

SANFORD BURNAM.

No. 434.—*Design for Spoons.*

What we claim, therefore, is the use of the ornamental design, substantially as herein set forth, for the purpose of ornamenting spoons, forks, or other articles to which it may be applied.

HENRY HEBBARD.
JOHN POLHAMUS.

No. 435.—*Design for Stoves.*

What I claim as new and original, and wish to secure by letters patent, is the design and configuration of the several ornamental figures on the front and bottom plates of a certain stove, as represented in the annexed drawings, and as above described.

WM. SAVERY.

No. 436.—*Design for Stoves.*

What I claim as my invention, and desire to secure by letters patent, is the configuration and design of the several ornaments, and their mouldings, particularized on the front, sides, doors, legs, and feet of the stove, formed and arranged as depicted and described.

J. HARVEY CONKLIN.

No. 437.—*Design for Stoves.*

What we claim therein as new, and for which we desire to secure letters patent, is the foregoing described configuration of the plates, forming

an ornamental design for a stove, as represented and illustrated by the drawings.

JAMES WAGER.
DAVID PRATT.
VOLNEY RICHMOND.

No. 438.—*Design for Floor Oil-Cloth.*

What I claim as my invention, and desire to secure by letters patent, is the representation of trunks of trees and landscape, as in the accompanying drawings, for a design for floor oil-cloth.

JAS. PATERSON.

No. 439.—*Design for Coal Stoves.*

What I claim is the design and configuration of a cast stove, substantially the same as described and represented in the annexed drawing.

JOHN BURGESS.

No. 440.—*Design for Mantle, Grate-frame, and Summer-piece.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the figures, flowers, and ornaments herein represented; the whole forming an ornamental design for a mantle, grate-frame, and summer-piece.

JAMES L. JACKSON.

No. 441.—*Design for Grate-frame and Summer-piece.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented, and forming an ornamental design for a grate-frame and summer-piece.

JAMES L. JACKSON.

No. 442.—*Design for Grate-frames.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of ornamental figures herein represented, and forming an ornamental design for a grate-frame.

JAMES L. JACKSON.

No. 443.—*Design for Grate frames.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented, and forming an ornamental design for a grate frame.

JAMES L. JACKSON.

No. 444.—*Design for Hair Combs.*

What I claim to be new and original, and desire to secure by letters patent, is the design and configuration of a ladies' hair comb as described above and represented in figures 1st and 2d.

JAS. SHIELDS.

No. 445.—*Design for Stoves.*

What we claim as our invention is the combination of the scrolls and foliage, arranged as set forth in the annexed drawings, so as to form an ornamental design for coal and wood parlor-stoves, to be known and called the Juno Parlor.

CONRAD HARRIS.
PAUL WILLIAM ZOINER.

No. 446.—*Design for Ladies' Hair Combs.*

What I claim as new, and desire to secure by letters patent, is the design, A, composed or formed of a series of ringlets or curls, (a,) said ringlets or curls forming a curve and placed on the upper part of the back of the comb; the ringlets or curls being in an inclined position, those on one side of the centre of the comb inclining in direction reverse from those on the other side, substantially as herein shown and described.

JAMES BLACKMAN.
CHARLES SKIDMORE.

No. 447.—*Design for a Grate-frame and Summer-piece.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented, and forming an ornamental design for a grate-frame and summer-piece.

JAMES L. JACKSON.

No. 448.—*Design for Stoves.*

What I claim therein as new, and desire to secure by letters patent, is the combination of the above ornaments, arranged as described.

JAMES LEFFEL.

No. 449.—*Design for Parlor Stoves.*

What we claim, and desire to secure by letters patent, is the design and configuration of stove, substantially the same as described and represented in the annexed drawings.

N. S. VEDDER.
WM. L. SANDERSON.

No. 450.—*Design for a Cooking Stove.*

Upon the general arrangement of said ornaments upon said stove as an original design, your petitioner asks a patent under the provisions of law in such case made and provided.

SAMUEL M. CARPENTER.

No. 451.—*Design for Cooking Stoves.*

What I desire to secure by letters patent is the configuration of and ornamenting the plates and panels of cooking stoves, substantially the same as herein represented and set forth.

JNO. J. SAVAGE.

No. 452.—*Design for Cooking Stoves.*

What we claim as our invention, and wish to secure by letters patent, is the application of the above design to cooking stoves.

ANTHONY J. GALLAGHER.

JOHN J. BAKER.

No. 453.—*Design for a Cooking Stove.*

What I claim as my invention, and desire to secure by letters patent, is the design and configuration of the conical rods, *l*, series of converging angular rays, *n*, central figure, *m*, and leg, *g*, as herein described, forming an ornamental design for a cooking stove.

S. H. SAILOR.

No. 454.—*Design for a Portable Furnace.*

What we claim, and desire to secure by letters patent, is the combination and arrangement of the ornaments herein represented and specified, making an ornamental design for a portable furnace.

JAS. G. ABBOTT.

ARCHILUS LAWRENCE.

No. 455.—*Design for a Cooking Stove.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the ornamental sheaf work, vine and flower work, &c., herein-above described and represented in the drawings, for the front, side, and back plates of a cooking stove.

APOLLOS RICHMOND.

No. 456.—*Design for Cooking Stove.*

What I claim as my invention or production, and desire to have secured to me by letters patent, is the design and configuration of the ornamental stove, all in combination, as herein substantially specified and represented in the accompanying drawings.

HOSEA H. HUNTLEY.

No. 457.—*Design for Cook Stoves.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the ornamental mouldings,

ribs, and rays, herein above described and represented in the drawings, for the side plate of a cooking stove.

THOMAS A. HERRICK.

No. 458.—*Design for a Cook Stove.*

What we claim as new, and desire to secure by letters patent, is the ornamental design and configuration of cook stove, the same as herein described and represented in the annexed drawing.

N. S. VEDDER.

WM. L. SANDERSON.

No. 459.—*Design for Ladies' Hair Combs.*

What I claim as my invention, and wish to secure by letters patent, is the design and configuration of fancy combs above described, and herein set forth.

WM. REDHEFFER.

No. 460.—*Design for a Towel Stand.*

I claim the ornamental design or configuration, substantially as represented in the drawings.

NATH'L WATERMAN.

No. 461.—*Design for a Portable Grate.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the sunken panels, leaf-scrolls, and ornamental mouldings, herein-above described and represented in the drawings, for the front of a portable grate.

DAVID THOMSON.

No. 462.—*Design for a Parlor Stove.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the several mouldings and ornaments as arranged together; the whole forming an ornamental design for a parlor stove, as herein set forth and described.

SAM'L D. VOSE.

No. 463.—*Design for a Coal Stove.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the several mouldings and ornaments as arranged together; the whole forming an ornamental design for a coal-burner stove, as herein set forth and described.

SAMUEL D. VOSE.

No. 464.—*Design for a Box Stove.*

What I claim as my invention, and desire to secure by letters patent, is the combinations of the several mouldings and ornaments as arranged

together; the whole forming an ornamental design for a box-stove, as herein set forth and described.

SAMUEL D. VOSE.

No. 465.—*Design for a Parlor Cook Stove.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the several mouldings and ornaments as arranged together; the whole forming an ornamental design for a parlor cook stove, as herein set forth and described.

SAMUEL D. VOSE.

No. 466.—*Design for a Dining-room Stove.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental form, design, and configuration, as herein described and represented, of the stove as a whole, and also of the several plates, the feet, and vase, separately.

WM. L. SANDERSON.

No. 467.—*Design for a Cooking-Stove.*

What I claim as my invention, and desire to secure by letters patent, is the design and configuration of the ornaments and mouldings herein described, constituting a design for a cooking-stove.

S. W. GIBBS.

No. 468.—*Design for a Cooking Stove.*

What I claim as my invention, and desire to secure by letters patent, is the design, combination, and arrangement of the several mouldings and ornaments upon the plates forming the stove, and also the configuration of the mouldings and ornaments upon each of the doors, and of the feet, substantially as described and represented.

JAMES H. CONKLIN.

No. 469.—*Design for a Parlor Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of parlor-stove, the same as herein described and represented in the annexed drawing.

J. D. GREEN.

No. 470.—*Design for Cooking Stove.*

What we claim as our invention or production, is the ornamental design for a cooking-stove, substantially as represented in the accompanying drawings; and we also particularly claim the combination of the star, shield, and radial lance heads, as exhibited in the panel of the larger door of the side plate.

WILLIAM F. PRATT.
GEORGE W. BOSWORTH.

No. 471.—*Design for a Cooking Stove.*

What I claim as my invention, and desire to secure by letters patent, is the combination of the several mouldings and ornaments as arranged together; the whole forming an ornamental design for an air-tight cook-stove, as herein set forth and described.

SAMUEL D. VOSE.

No. 472.—*Design for a Hat and Umbrella Stand.*

What I claim as my invention, and desire to secure by letters patent, is the new design for a hat and umbrella stand, consisting of the ornamental figures above set forth, and represented in the accompanying drawings.

CHARLES ZEUNER.

No. 473.—*Design for a Portable Grate.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the gothic arches, mouldings, pendants, &c., herein above described and represented in the drawings, for a portable grate.

APOLLOS RICHMOND.

No. 474.—*Design for Parlor Stove Plates.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the mouldings, raised points, vine and leaf work herein above described and represented in the drawings, for the top, bottom, and side plates of a parlor stove.

AMOS PAUL.

No. 475.—*Design for the front and side plates of a Cooking Stove.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the mouldings, spear-heads, and stars with rosettes, herein above described and represented in the drawings, for the front and side plates of a cooking-stove.

DUTEE ARNOLD.

No. 476.—*Design for a Medallion of Daniel Webster.*

What I claim is the design of a medallion of Daniel Webster, as represented in the drawings above referred to.

PETER STEPHENSON.

No. 477.—*Design for Cooking Stove.*

What I claim as new, and desire to secure by letters patent, is the combination of the ornaments, A, B, C, with the panels, D, E, F, raised on the surface of the side plate of the stove.

SAMUEL FBERLY.

No. 478.—*Design for a Water Cooler.*

What I claim as my production, and desire to have secured to me by letters patent, is the design and configuration of an ornamental water-cooler, substantially as described and represented in the annexed drawings.

PATRICK MOLONY.

No. 479.—*Design for a Cooking Stove.*

We do not claim the exclusive right to the general construction of the stove; but what we do claim is the design and configuration of the ornaments and mouldings, as described and set forth in the accompanying drawings.

RUSSELL WHEELER.
S. A. BAILEY.

No. 480.—*Design for a Cooking Stove.*

What we claim as our invention, and desire to secure by letters patent, is the design and configuration of the mouldings, conical rods, *f*, petals, *i*, rosette, *c*, scroll, *e*, and foot, *g*, as herein described, forming an ornamental design for a cooking stove.

GARRETTSON SMITH.
HENRY BROWN.
J. HOLZER.

No. 481.—*Design for a Grate-frame and Fender.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented, and forming an ornamental design for a grate-frame and fender.

JAMES L. JACKSON.

No. 482.—*Design for a Grate frame and Fender.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented, and forming an ornamental design for a grate frame and fender.

JAMES L. JACKSON.

No. 483.—*Design for a Grate-frame, Summer-picce, and Fender.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented, and forming an ornamental design for a grate frame, summer-piece, and box fender.

JAMES L. JACKSON.

No. 484.—*Design for Cooking Stove.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental designs for a flat-top cooking stove, as herein described and arranged and represented in the annexed drawing.

FREDERICK SCHULTZ.

No. 485.—*Design for a Stove.*

What we claim as our invention, and desire to secure by letters patent, is the ornamental designs for a nine plate stove, as herein described and represented in the annexed drawings.

J. BEESLEY.

EDWARD DELANY.

No. 486.—*Design for a Cooking Stove.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental designs for a stove called Complete Cook, as herein described and represented in the annexed drawings.

J. BEESLEY.

No. 487.—*Design for a Parlor Stove.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the bead and lattice work and human figures herein above described, and represented in the drawings, for a parlor stove.

DUTEE ARNOLD.

No. 488.—*Design for a Six-plate Stove.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms represented in the accompanying drawings, forming together an ornamental design for six-plate stove.

SAMUEL F. PRATT.

No. 489.—*Design for a Cooking Stove.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms represented in the accompanying drawings, forming together an ornamental design for a cooking stove.

JOHN S. PERRY.

No. 490.—*Design for a Cooking Stove.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms represented in the accompanying drawings, forming together an ornamental design for a cooking stove.

JOHN S. PERRY.

No. 491.—*Design for Parlor Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of stove plates, the same as herein described and represented in the annexed drawings.

EZRA RIPLEY.

No. 492.—*Design of a Parlor Stove Plate.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of stove plate, the same as herein described and represented in the annexed drawings.

SAMUEL A. HOUSE.

No. 493.—*Design for the Top and Front Plates of a Parlor Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of parlor-stove top and front plates, the same as herein described and represented in the annexed drawings.

SAMUEL A. HOUSE.

No. 494.—*Design for Parlor Stove Front.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of stove front, the same as herein described and represented in the annexed drawings.

SAMUEL A. HOUSE.

No. 495.—*Design for a Medallion of General Scott.*

What I claim is the design of a medallion of Winfield Scott, as represented in the drawings above referred to.

PETER STEPHENSON.

No. 496.—*Design for a Medallion of Franklin Pierce.*

What I claim is the design of a medallion of Franklin Pierce, as represented in the drawings above referred to.

PETER STEPHENSON.

No. 497.—*Design for a Coal Stove.*

What I claim as my invention, and desire to secure by letters patent, is the within-described design, configuration, and general arrangement of the forms, ornaments, and mouldings upon the stove as a whole, and upon the following parts individually: the side, back, and front plates, doors, bottom plate, top plate and cover, feet, water vase, cover and front of ash-pit; the whole being shown in the accompanying drawings.

WM. L. SANDERSON.

No. 498.—*Design for a Cooking Stove.*

I do not claim any detailed part of the mouldings, or configuration. What I claim as my invention, and desire to secure by letters patent, is the general combination of the several mouldings and ornaments as arranged together; the whole forming an ornamental cooking stove, as herein set forth and described.

SAMUEL D. VOSE.

No. 499.—*Design for Parlor Stove.*

What we claim as our invention, and desire to secure by letters patent, is the combination of the scrolls and foliage, arranged as set forth in the annexed drawing, so as to form an ornamental design for parlor stoves, to be known and called the "Cottage Franklin."

CONRAD HARRIS.

PAUL WILLIAM ZOINER.

No. 500.—*Design for a Cook Stove.*

I do not claim any detailed part of the mouldings or configuration. What I claim as my invention, and desire to secure by letters patent, is the general combination of the several mouldings and ornaments as arranged together; the whole forming an ornamental air-tight cook-stove, as herein set forth and described.

SAMUEL D. VOSE.

No. 501.—*Design for a Cook Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of cook-stove, the same as herein described and represented in the annexed drawing.

N. S. VEDDER.

No. 502.—*Design for Parlor Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of stove plates, the same as herein described and represented in the annexed drawings.

JAMES J. DUDLEY.

No. 503.—*Design for a Camera Stand.*

I will proceed to state what I claim and desire to secure by letters patent. What I claim, therefore, is the design and configuration of the several ornaments, forming, in combination, an ornamental stand for cameras and other purposes, as described and set forth.

W. A. ALLEN.

No. 504.—*Design for a Wire Fence.*

What I claim as my invention, and desire to secure by letters patent, is the design of a wire fence, ornamented as herein described and shown in the accompanying drawings.

FRANCIS KILBURN.

No. 505.—*Design for a Cooking Stove.*

What I claim, and desire to secure by letters patent, is the design and configuration, as herein shown, of the stove, as a whole, and of the front, back, and side plates, severally.

ORIN W. ANDREWS.

No. 506.—*Design for a Cooking Stove.*

What I claim as my invention or production, is the ornamental design for a cooking stove, substantially as represented in the accompanying drawings.

CHARLES B. TUTTLE.

No. 507.—*Design for a Grate-frame and Summer-piece.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented; the whole forming an ornamental design for a grate-frame and summer piece.

ADAM HAMPTON.

No. 508.—*Design for a Table-frame and Legs.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the scroll, vine, and leaf work herein above described and represented in the drawings, for the side-piece, leg, and cross-brace of a table.

WALTER BRYENT.

No. 509.—*Design for a Grate-frame.*

What I claim therein as new, and desire to secure by letters patent, is the combination and arrangement of the ornamental figures herein represented; the whole forming an ornamental design for a grate-frame.

JAMES L. JACKSON.

No. 510.—*Design for Parlor Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of top and front stove-plates, such as herein described and represented in the annexed drawings.

N. S. VEDDER

No. 511.—*Design for a Cooking Stove.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together an ornamental design for a cooking stove.

ELIHU SMITH.

No. 512.—*Design for Forks, Spoons, &c.*

We do not claim the outline of the spoon, fork, ladle, &c.; but what we do claim, and desire to secure by letters patent, is the design and configuration of the ornaments for spoons, forks, ladles, knives, sugar-tongs, &c., above described and set forth in the accompanying drawings.

ROBT. TAYLOR.

ROBERT DICKSON LAURIE.

No. 513.—*Design for a Cooking Range.*

We claim the design, consisting of the combination of the wheat sheaf, running vine, and enclosing fillet or bead, as placed on each of the oven or fireplace or chamber doors; and we also claim the ornamental design on either of the plates, A, B, R, S, as described.

BENJAMIN WARDWELL.

EPHRAIM R. BARSTOW.

No. 514.—*Design for a Cast iron Cradle.*

What I claim as my invention, and desire to secure by letters patent, is the design and configuration of the ornaments upon the body, A, A, fig. 1, and upon the sectional parts represented by figs. 2 and 4, combined, as in the drawing hereunto annexed, to form an ornamental iron cradle.

P. M. HUTTON.

No. 515.—*Design for a Cooking Stove.*

What we claim therein as new, and for which we desire to secure letters patent, is the above-described ornamental design and configuration of the plates, as represented.

JAMES WAGER.

VOLNEY RICHMOND.

HARVEY SMITH.

No. 516.—*Design for a Cooking Stove.*

I claim as new, and of my production, the general ornamental design and configuration as exhibited in the drawings, and especially claim the design of each of the fireplace doors, and that of the oven doors.

JOSEPH PRATT.

No. 517.—*Design for a Pump Curb.*

What we claim as our invention, and desire to secure by letters patent, is the combination and arrangement of ornamental forms, carvings, and configurations, as represented in the annexed drawing, (fig. 1,) making an ornamental design for the curb of a chain pump.

JOHN W. WHEELER.
O. B. LATHAM.

No. 518.—*Design for Stove Plates.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the bead-work, mouldings, and ornamental configurations, herein-above described and represented in the drawings, for the side-plate of a cooking stove.

WILLIAM M. SNOW.

No. 519.—*Design for a Cook Stove.*

What I claim as new, and desire to secure by letters patent, is the ornamental design and configuration of cook-stove plates, such as herein described and represented in the annexed drawing.

N. S. VEDDER.

No. 520.—*Design for a Parlor Stove.*

What I claim as my invention, and desire to secure by letters patent, is the design and configuration of the several plates, and of the feet, and also of the ornaments, *a, b, c, d, e, h, f, g,* and *m*, separately, as herein shown and described.

WASHBURN RACE.

No. 521.—*Design for a Pedestal and Column.*

What I claim, and desire to secure by letters patent, is the ornamental design on the pedestal, consisting of the combination of the grapes, leaves, scrolls, and face, in alto or basso rilievo, as shown; and also the ornaments for the base, shaft, and capital of the column, herein described and shown in fig. 2 of the accompanying drawing.

THOS. LAW.

No. 522.—*Design for a Parlor Stove.*

What I claim as my invention or production, and desire to secure by letters patent, is the ornamental design of the top plate, A, the bed plate, B, the grate plate, C, the door frame, D, the foot, E, and the column base, F, of the stove called "the Radiator," as fully set forth and described in this specification and the annexed drawings.

S. H. SAILOR.

No. 523.—*Design for a Cannon Stove.*

What I claim as my invention or production, and desire to secure by letters patent, is the new and ornamental design upon the bed-plate, A,
24—*m*

the lower part, B, of the body of the stove, the grate plate, C, the octagon frame, D, the top plate, H, and the leg, E, of the stove called "the Octagon Cannon," combined, arranged, and having the configuration set forth and fully described in this specification and the annexed drawings.

S. H. SAILOR.

No. 524.—*Design for a Stove.*

What I claim as my invention or production, and desire to secure by letters patent, is the ornamental design upon the front ends and feet of the stove, as fully described in this specification and the accompanying drawings.

S. H. SAILOR.

No. 525.—*Design for Stove Plates.*

What I claim as my invention or production, and desire to secure by letters patent, is the ornamental design of the oven doors, A, the cleaning door, C, the feeding door, D, the ash-hole door, E, and the configuration and arrangement of the mouldings and ornaments of the frames, B and F, as set forth and described in this specification and the annexed drawings.

S. H. SAILOR.

No. 526.—*Design for a Franklin Stove.*

I claim as new, and of my production, the said ornamental design, substantially as exhibited in the drawings, and above explained.

JOSEPH PRATT.

No. 527.—*Design for a Parlor Grate.*

I claim as new, and of my production, the design and configuration of the ornaments of the front plate and mantel or top plate of the fireplace, the hearth, the fender plate, and the blower, as represented in the drawings, and as above described; the whole forming an ornamental design for a parlor plate.

JOSEPH PRATT.

No. 528.—*Design for a Parlor Stove.*

What I claim as my production, and desire to have secured to me by letters patent, is the new design, consisting of the ornamental configurations and raised figures herein-above described and represented in the drawings, for a parlor stove.

DUTEE ARNOLD.

No. 529.—*Design for a Franklin Stove.*

What I claim as my production, and desire to secure by letters patent, is the combination and arrangement of ornamental figures and forms, represented in the accompanying drawings, forming together an ornamental design for a Franklin stove.

SAMUEL F. PRATT.

No. 530.—*Design for Window Blinds.*

What I claim, and desire to secure by letters patent, is the design and configuration given the slats of window blinds, as above described and set forth in the annexed drawings.

NATHAN CHAPIN.

No. 531.—*Design for a Cook Stove.*

What we claim as new, and desire to secure by letters patent, is the ornamental design and configuration of cook-stove, such as herein described and represented in the annexed drawing.

EZRA RIPLEY.
N. S. VEDDER.

No. 532.—*Design for a Box Stove.*

What we claim therein as new, and for which we desire to secure letters patent, is the foregoing configuration of the ornaments upon the plates, forming an ornamental design for a stove, illustrated and represented by the drawings.

JAMES WAGER.
VOLNEY RICHMOND.
HARVEY SMITH.

No. 533.—*Design for Iron Railing.*

What I claim as my invention, and desire to secure letters patent for, is a design for ornamental iron railing, as described in the above specification, and illustrated in the accompanying drawings.

N. T. HORTON.

No. 534.—*Design for a Coal Stove.*

What I claim as my invention, and desire to secure by letters patent, is the ornamental design and configuration of the stove, A, and door, E, and also the ornamental openings, B, B, D, D, F, F, G, G, and H, H, in combination with the different mouldings, as herein shown and described.

GILBERT KNAPP.
ADNAH H. NEAL.

No. 535.—*Design for Stove Plates.*

What we claim as new therein is the embellished panel of the plate of the configuration herein represented and described.

SHERMAN S. JEWETT.
FRANCIS H. ROOT.

No. 536.—*Design for a Cooking Stove.*

What we claim as new therein, and desire to secure by letters patent, is the configuration and arrangement of the several devices, ornamenting

the panels and doors, the same consisting of annular mouldings surrounding the apex of a dished or hollow cone surface, formed of converging fillets, whose outer ends form a scalloped outline, or border, for the panel, as represented and described.

SHERMAN S. JEWETT.
FRANCIS H. ROOT.

No. 537.—*Design for a Hearth Plate.*

What we claim as new, and for which we desire to secure letters patent, is the foregoing design and configuration of the plates, forming an ornamental design for a stove, as illustrated and represented by the drawings.

JAMES WAGER.
VOLNEY RICHMOND.
HARVEY SMITH.

No. 538.—*Design for a Spittoon.*

We claim the design of the shape and configuration of spittoon shown in the drawing.

W. L. PEARSALL.
S. W. PEARSALL.

No. 539.—*Design for a Girandole.*

What I claim as my production, and desire to secure by letters patent, is the arrangement and combination of the foliage, drapery, human figure, and flowers, as set forth in the accompanying drawings, forming an ornamental design for a girandole.

ROBERT E. DIETZ.

EXTENSIONS.

Improvement in Planing Machines.

What I claim of the above-described improvements, and desire to secure by letters patent, are the grooves, or channels, in the face of the plane-stocks, with the arrangement of the cutters corresponding with the grooves, whereby the extra thickness of a plank or board is taken off, or reduced with greater ease and effect; the particular arrangement and construction of the plates, or slides, to which the cutters are fastened; the clamps, with the back plates, for guiding the plank or boards, and keeping them in a straight direction; the cross-slides, with their springs, for supporting the plank in the operation of planing. And I also claim the general combination of the parts of the machine taken as a whole; for, although many of the parts taken individually are not new, yet the machine, as above described, is sufficiently characterized by the arrangements of its respective parts, whether old or new, to distinguish it from others previously constructed for the same purpose.

BRS. LANGDON.

Improvement in Planing Machines.

What I claim of the above described improvements as my invention, and desire to secure by letters patent, is the slide, with its seat, or chucks, for holding the shingle and giving it its proper taper; the manner of securing it in its bed by means of the clamps, and carrying it before the face of the plane; and also the general combination of the different parts, by the union and arrangement of which the aforesaid results are produced in the manner above described.

B. LANGDON.

Improvement in the construction of Gaffs of Sail Vessels.

What I claim as my invention, and desire to secure by letters patent, is the application of a saddle in the swallow-tail of the gaff of said vessel, constructed and operating in the manner set forth.

JOHN BROWN.

DISCLAIMERS.*Improvement in the construction of Violins, &c.*

Your petitioner, therefore, hereby disclaims so much and such parts of his said claim, in said specification set forth, as is or are intended to claim as something first invented by him, or to secure to him or his representatives the exclusive right to use or vend the brace-bar, or supporter, aforesaid, for the purposes, or any of the purposes, in the said specification indicated.

WM. B. TILTON.

Improvement in Apparatus for Dyeing.

Your petitioner, therefore, hereby enters his disclaimer to that part of the claim in the aforementioned specification, whereby is claimed any particular apparatus for dyeing with liquid dyeing material by stopping off or excluding the same from certain portions of the cloth, according to the design, while it has free access to the other parts of the cloth, independently of the vertical frames, A, B, as a part of said apparatus; meaning, however, still to claim the mode of applying said principle by means of the apparatus, with the end frames, A, B, as specified in said letters patent, which disclaimer is to operate to the extent of the interest in said letters patent vested in your petitioner, who has paid ten dollars into the treasury of the United States, agreeably to the requirements of the act of Congress in that case made and provided.

JOHN HOLT.

ADDITIONAL IMPROVEMENTS.

No. 100.—*Improvement in Machine for making Horse-shoe Nails.*

I now claim as an improvement, additional to the first-named invention, such a combination under a different arrangement, or, in other words, I claim a new *arrangement* of the parts of such combination, by which I am enabled to operate them by a continuous circular motion of the sustaining frame of the cams around one axis, instead of a reciprocating rectilinear motion, such as is described in the specification of my said patent; my new arrangement enabling me to operate with much greater rapidity and advantage than by that before exhibited. My said new arrangement consists in arranging the several cams on radial and horizontal shafts in a rotating frame, E, in combination with arranging the working surface of the former, F, on a circular arc, to conform to the sweep of the wheel, and with a variation only sufficient to form that side of the nail which bears directly against it; the whole being substantially as represented in the drawings which make part of this my specification.

MARSHALL BURNETT.

No. 101.—*Improvement in the mode of cooling the hot Mashers of Distillers.*

Now what I claim as my additional invention, and desire to add to my former patent, granted January 20, 1852, is forcing cold air into the distillery mash through the hollow shaft, arms, and rake agitators, as above described, or by forcing it by a pipe, or pipes, into the bottom, or near it, of any common mashing machine, or tub.

FRED'K SEITZ.

No. 102.—*Improvement in Heddles of Weaver's Harness.*

Having thus described my improvement, what I claim as my invention, and desire to have added to my patent, is casting eyes of harness, or heddles, upon single or multiplied strands of worsted, silk, cotton, thread, or other material, in the manner and for the purpose herein set forth.

JACOB SENNEFF.

No. 103.—*Improvement in Hot Air Furnaces.*

My present improvement, therefore, and what I claim, consists in the above-described arrangement of the pipes, B, I, in combination with that of the arched pipes, F², C¹, G¹, and ash-chambers, D¹, L¹, B¹, H¹, by which arrangement the products of combustion are divided after passing from the chamber of combustion, and made to flow through the several pipes and ash chambers, substantially as stated.

This arrangement is made to secure a shorter and stronger draught, with the same amount of radiating surface, and is designed to be used when the fire-pot is lined with soap stone.

GEO. S. G. SPENCE.

VII.

EXAMINERS' REPORTS.

SIR : In accordance with your request, I have the honor to submit a report of the number of cases received and acted upon, at the desk under my charge, during the year 1852.

These cases, and the action thereon, are, as usual, classed as follows:

Number of cases on hand January 1, 1852	-	-	-	1
Number of cases passed for issue during the year	-	-	-	165
Number of rejections, either formal or final	-	-	-	328
Whole number of actions on cases during the year	-	-	-	1,010
Number of cases on hand January 1, 1853	-	-	-	15

I also, in pursuance of your instructions, report the following epitome of the more noticeable inventions which have been examined by me during the years 1851 and '52, premising, in accordance with a conviction generally felt in this Office, that this meagre and imperfect sketch is but a poor substitute for that which ought to be a Patent Office Report, namely: a succinct and clear digest of every patent, accompanied, whenever necessary, with drawings prepared by some officer, or officers, of sufficient skill, who would be enabled to devote their whole time to this duty. The French Patent Office has for many years afforded an example, in this respect, worth imitation, not only by our own, but by other National Patent Offices; and the eagerness with which its published Brevets d'Invention are consulted by all who do business with or for the Patent Office, affords some idea of the immense demand that would accompany a similar American publication. Its importance as a guide to the trodden paths of invention, and as a continuous record of French ingenuity, cannot be overrated; and it may be safely said that a similar publication emanating from our own Office, and enriched by descriptions of American invention, which is prolific and original to a degree unknown in countries where labor is more plenty and where antiquity has more reverence, would be more sought after and more valued in our own country, and would afford to other civilized communities a knowledge of certain classes of machines and processes hitherto entirely unknown to them.

A different stage of civilization, different accidents of soil or climate, and different social features, must inevitably, in each different country, attract the spirit of invention in different channels. In countries where labor is cheap, luxury diffuse, and commerce has no existence,

invention will find its channels either in science or in those arts which conduce to luxury and refinement.

In those nations, under similar circumstances in other respects, but where commerce holds its place and takes a rank first in actual importance if not first in the estimation of its votaries, or of those who, looking at it through the eye of time-honored prejudice, regard business as vulgar, merchants as but hucksters on a large scale, and manufacturers as mean of spirit, sacrificing to gain all that ennobles or elevates human nature, experience proves that invention takes a wider, a more utilitarian and practical, and a more generally useful sphere.

It is, however, only in countries like our own, with vast territory, unbounded affluence of raw material, great energies devoted to the search after wealth and progress, where men are always stirring, with minds unbiassed by the slightest reverence for what is old, and where men's hands procure more by their daily labor than in any country that the sun ever shone upon, that invention assumes the true, practical, homely character of administering to the wants of all, however humble or lowly; and it is in such a country that ideas entirely novel are most often carried into practical operation.

As a natural result of such a state of affairs, and of the principle—more than once alluded to by me in other reports—that invention, like all other marketable articles, supplies the demand, there are in this country certain classes of machines and processes almost unknown in others; and it is a description of these that is wanted, not only by our own inventors, but by the world.

No country, for instance, possesses machines for working lumber in such perfection as our own; no country makes nails, and spikes, and screws, as we do; no country can compete with us in cheap, and at the same time useful, agricultural instruments. The rivers of no nation are graced by such efficient and beautiful steamboats as those which float upon our own eastern waters. The sea is furrowed by no ships which are equal in speed and beauty to our own. Our railroads are cheaper than those of any other portion of the globe, yet they are still durable, and render efficient service. Our bridges almost realize the fancy of the architect who would have modelled in size after the arch of the rainbow, and yet, with their enormous span, they cost but a tithe of those employed in other countries; and who is there who travels through our land who can be blind to the thousand and one comforts of the humble homes which are due solely to the ingenuity of their own countrymen? Who made for them their cheap stoves, furnaces, and cooking apparatus? Who afforded them furniture as comfortable as the most costly, and as low in price as the rudest? Who stopped the wintry air from every cranny of their dwellings? Who measured for them their time? Who gave them cheap publications? Who furnished them with cheap transport of the produce of their farms? Who enabled them to till thousands of acres, and secure their harvest with an amount of labor formerly only capable of working a garden? It was American inventors who have performed this task, and it is time that their deeds should be known.

In making these statements I do not mean to endorse the somewhat too current opinion that we succeed in all that we attempt, or that we essay and do whatever is done by others; and I do mean to acknow-

ledge that we are far behind some of our contemporaries in many arts of taste and luxury, in many beauties of high finish, and in much of that solid and costly species of construction that is meant to endure for ages; but while thus admitting, I assert that the character of our inventions, whether in strict science or in the operative arts, is eminently practical, original, adapted to our own wants, and well suited, if known, to advance the happiness and elevate the social position of the middle and lower classes of other nations.

These general considerations are in themselves of no small importance, when considering the propriety of publishing suitable descriptions of American patents as they are issued; but the true practical end of the publication, for those most interested—namely, inventors themselves—is that it will furnish to those now engaged in plans or experiments, a guide to that which has been before done; warning them away from ideas already carried out, and now the property of others; placing before them records showing where experiment has failed, and what remains unattempted; and serving as a sort of dictionary of ingenious mechanical ideas on every art, which may be used in new combinations in diverse arts, and produce new and useful effects.

But while recommending strongly, and in accordance with views held for many years, this Annual Report, it seems to me proper to state my belief that any attempt at a systematic digest of American invention, from the commencement of the century up to the present day, would be likely to prove a signal failure,—that it would only rake up and uncover many crudities, useful indeed in their time, but now decayed, forgotten, and covered with a vigorous and useful growth of other contrivances, serving the same purpose in a more efficient manner.

Such a digest would afford pleasure to those who look at old inventions, as they do at other antiquities, and value all the more highly every article which is covered with the rust of ages, and is so rude and cumbersome as never to have been fit for modern use. It would gratify the curiosity of those who grope always in search of something which shall be identical with the last wonder, but ever find that some slight difference or some unexpected change meets their gaze, destroying all identity between the old and the new, and showing good reason for the disuse of the one and the general favor which is accorded to the other.

If such a digest be attempted, it should go no further back than the date of our present patent law; and if there be any question as to dispensing either with the digest or with the annual publication of patents, it seems to me easy to prove that the former is the one which should be abandoned.

The discussions on these subjects have at last reached the ears of those high in authority, and it is to be hoped that they will now vigorously follow up their somewhat tardy suggestions, and that Congress will see fit to authorize such a publication as may be creditable to the country and supply the want so long felt by those most deeply interested.

It seems well further to mention, before commencing my epitome, that during the last two years invention appears to have followed much in the ordinary channels. We have examined no striking novelties of principle, although we have been called upon to consider much that is useful and novel, either in detail or in new application of well understood laws. No sudden demand appears to have brought

many minds to reflect and invent upon the same subject, with the exception of that arising from the notice by the General Post Office that they were about making a new lock contract.

This notice brought in a flood of applications for patents in pad-locks: some ingenious, but impracticable; others new and useful; and others that had neither novelty, ingenuity, nor utility to recommend them. With this exception, the applications have borne their usual numerical relation to each other, no special branch occupying more than its ordinary space; and, in my notices of the machines patented under such applications during the last two years, I shall, in a great measure, follow the arrangement adopted in previous reports.

METALLURGY.

In the diversified class of *metallurgy*, there have been granted during the last year one hundred and fifteen patents, and among them may be noticed the following:

First. A novel form of reverberating furnace, which is designed to dispense with the labor usually expended in stirring and balling materials exposed to the action of the fire in this species of furnace. A grate, fire chamber, ash-pit, &c., are, with the fire bridge, constructed of brick in the ordinary manner; and at the usual distance therefrom is built a chimney and horizontal passage leading into the same, also in the ordinary way.

The body of the furnace, the roof, and working bottom are omitted; and their place is supplied by a cylinder of cast-iron lined with fire-brick, and free to revolve upon metallic rollers.

This cylinder has an area about equal to that of the ordinary working chamber, is provided with a door fitted like a man hole or a hatch, and has revolution imparted to it by means of a cog-wheel or a belt.

The materials, broken pig for instance, are introduced through the door, which is then closed; motion is now communicated to the horizontal cylinder, and each portion of its periphery in turn becomes the bottom, while the contents are rolled, or turned over and over, and continually exposed to the flame which passes through the cylinder on its way from the grate to the chimney.

It is obvious that every portion of the surface of each fragment will be exposed to the action of the flame, and that the mass, when melted, will be continually stirred or agitated as if acted upon by the ordinary rabble. I am not informed as to the fact of this furnace having been practically tested, but see few difficulties in the way of its successful operation, and these of such a character as may be easily remedied.

Another furnace of the same class, and having in view the saving of the same kind of labor, has been patented by another inventor, favorably known as a practical metallurgist.

The bottom of his furnace is a cast-iron table, circular in its contour, covered with brick, and revolving on a vertical axis under the ordinary fire brick roof of the reverberating furnace. Through the ordinary working door projects into the furnace and over the revolving bottom a rabble connected at its outer end to a slide, actuated by machinery which gives to the rabble a reciprocating motion. This slide runs upon a guide whose angle to the side of the furnace may be changed by the operator, and the rabble is thus forced to stir over every portion of the working bottom.

Ingenious arrangements for cooling the cast-iron plate and for packing it at its junction with the brick work are involved in the patent and form a part of the invention.

One of the most important inventions of the two years past is to be found described in a patent for the "foundry apparatus," which was granted to an inventor who has already obtained patents for machinery of somewhat similar character, and has long been experimenting on the practical minutiae of apparatus which will accomplish for the founder that which other labor-saving machines have heretofore accomplished for other operatives. The first duty performed by the improved machine is the tempering of the sand, which is afterwards sifted and deposited in measured quantities in a flask; parting sand is then applied in the proper locality, and a pattern is forced into the flask. The machine then removes the pattern and delivers the flask in such position that an attendant may remove it from the machine and supply its place with an empty one. The measuring of the quantity of sand, and the use of a flask of a peculiar internal section depending upon the contour of the pattern, are found to be matters of vital importance to the successful action of the machine.

The inventor shapes the interior of the flask in such manner that there shall be the greatest depths or thicknesses of sand in the direction of the greatest compression caused by the forcing in of the pattern, and thus secures an equally hard face over the whole moulded surface.

The same patent includes a description of an improved core spindle, formed by casting or otherwise, making a long iron bar, whose section is a cross, and then wrapping the same from end to end with wire, which thus takes the form of a helix. This spindle is then coated with loam by means of a machine noticed in one of my previous reports, and, it is obvious, will serve as the nucleus of a core which will be more pervious to the air and less apt to blow than those ordinarily employed.

A method of connecting several flasks to a single sprue, contained in a separate flask or iron case, is also described and claimed.

The inventor rightly judges that his machine is chiefly, if not exclusively, applicable to small castings, and more especially to pipe of less than three inches diameter. Samples of its performances in the latter class of castings may be seen at the Patent Office, and are more perfect than any made by hand that have come under my inspection. It appears to me that the successful action of the machine cannot be doubted, and that its introduction will materially cheapen a most extensive branch of manufacture, and one which has hitherto received no aid from labor-saving machinery.

In the same branch of art has been patented an improvement in moulding pipe boxes, or hubs for wheels, which consists in turning off a small portion of the outer surface of the pattern, and supplying its place by a thin smooth piece of metal, whose interior is cylindrical, and whose outer periphery is a frustrum of an acute cone, or the interior surface may be parallel to the exterior. The inventor terms this piece a shield. In moulding, it is slipped over the pattern, which is rammed up, as usual, in a flask with a single parting. When the cope is lifted from the drag, it carries with it the shield, and leaves the rest of the pattern in the drag. The shield is now easily withdrawn, and perfect facility is afforded for lifting the remainder of the pattern from the solid cylinder of sand, which has been rammed into its interior, and constitutes the core.

Improvements have been patented in the manufacture of cast and wrought iron Venetian blinds. The improvement consists in a certain arrangement of the slats and cross pieces in the flask, and in casting the uprights upon them, attaching the whole together in such a manner that the finished article is not warped or twisted as it would be when the whole periphery is cast at the same time around wrought iron slats.

An improved method of lifting the ordinary trip hammer deserves notice, as by means of it any different degree of blow within the range of the lifting cams can be attained with a facility almost equal to that afforded by the steam hammer. In this contrivance the cam, instead of acting directly upon a lifting leg, acts upon the end of a lever, vibrating in a vertical plane, which embraces that leg. This lever is provided with a sort of toggle catch, which grasps the leg firmly whenever the lever is raised, but has no hold thereon when the lever is falling. A wedge enables the attendant to regulate the point to which this lever shall fall. The cams in their revolution strike it sooner or later, according to the distance it has been permitted to drop; and the instant that the lever commences to rise, it clasps and holds the leg, forcing the hammer up a distance proportioned to its own ascent only.

A simple improvement in anvils bids fair to obviate an important practical difficulty in their construction. This difficulty has its origin in the heat retained for a long time in the immense mass of metal behind, or rather below, the centre of the steel face in the process of hardening, which heat prevents the rapid cooling of the steel face, and generally leaves a soft spot near its centre. By forming the body of the anvil with a cavity of some size extending from its bottom nearly to its face, a portion of the metal at the centre is dispensed with, and facility for the introduction of a stream of cold water into the centre of the mass, and almost upon the bottom of the face, is afforded during the process of hardening. The centre of the mass is therefore cooled almost as rapidly as its exterior, and a sound and equally hard face is, in consequence, a matter of easy attainment.

Improvements in the gold-beating machine alluded to in my former report have also been patented. While these changes render the machine more complicated, they at the same time increase its efficiency; and the apparatus may somewhat, in the words of its French originator, be now said to have been promoted from its situation as an apprentice and taken its rank, not merely as a journeyman, but as a finished master workman. This machine, by means of a single cam acting through mechanism somewhat similar to the link motion of a steam-engine, gives many various ranges of motion to the mould, and has also a very beautiful contrivance for reversing the mould at the end of each definite number of strokes, so that the face lately acted upon by the hammer then rests on the anvil, and in turn takes its former position, and thus until the beating is completed. Several of these machines have been in actual use, and will, it reports can be trusted, much cheapen the manufacture of gold leaf.

The usual number of patents in apparatus for moving blinds and shutters without opening the sash has been granted. These inventions have, however, been patented as new ways of producing the old result, and do not appear to have materially cheapened the apparatus, nor do they perform in a much better or more certain manner the result which was

accomplished by their predecessors. The whole class has, however, called attention to the subject, and has imparted to northern dwellings a comfort which can only be appreciated by those who inhabit an inclement climate.

An improvement in file machines, presenting an easy method of giving different amounts of feed to the carriage which supports the blank at certain times firmly on its bed, while at others it gives it free motion to adapt itself to the chisel, has also been patented.

Machines of this class have long occupied the attention of the inventor, and have lately come into actual use; good coarse files made by one lately patented being in the possession of this Office. It does not appear, however, that any of them have, in the manufacture of *fine* files, been able to compete with that exquisite sense of touch which is the unfailing guide of the file cutter, and which, in many instances in this branch of manufacture, puts the blind workman on even a better footing than his comrade who has full possession of his sight.

Many of these machines have apparatus which actually set the chisel by feeling. Complication, however, must result from such a basis of action, and the present successful machines perhaps owe their efficiency in no small degree to the simplicity of movement which disregards inequalities in the texture of the blank, and, while it may spoil some files, is yet unfailing in its own power to produce, and does produce, a good article whenever a blank approaching to perfection is submitted to its action.

A very ingenious machine for separating blanks from a heated bar, bending them into shape, welding their ends together, and thus completing a link, and finally forming each new link inside of that previously formed, so that a junction is made, and a chain is progressively completed automatically, has been invented and patented.

This machine, like that of somewhat similar character described in my last report, is too complicated to be intelligibly described without drawings. It is moreover not improbable that many of the motions which act admirably in the model will fail entirely in the working machine, and that patient and persevering experiment will be required ere the whole contrivance assumes a thoroughly practical shape.

Among the many improvements in machinery for threading wood-screws has been patented one whose cutter is somewhat like the fusee of a watch, with the difference that the grooves are in three sections, parallel to its axis, counterparts of the threads of the screw to be cut, and that these grooves are deeply notched or serrated, so as to form a series of cutters. This cutter has swift revolution on its axis, and its periphery revolves in contact with a blank, properly supported and presented to it; the blank also, revolving in the same direction as the cutter, and having a slight motion in the direction of the axes of the cutter, is gradually pressed against its periphery, so as first to mark, then to deepen, and finally to finish, its thread.

These are the main characteristics of the machine, which is provided with many other ingenious contrivances, subordinate, indeed, to the general principle, but essential to its prompt and correct action. The rapidity with which this machine performs its work, and the accuracy and beauty of the screws made by it, are equally wonderful. I do not precisely define its speed, nor the number of small screws that it will turn out per

hour; but I am credibly informed and believe that its introduction into use will make it quite as profitable for the manufacturer to sell the smaller as it now is for him to dispose of medium sized screws.

Good nuts, that shall at the same time be cheap, and must of necessity be machine-made, have long been a desideratum, and several inventors have during the last two years produced machines which finish and turn out nuts much cheaper and better than any that are manufactured by hand. These machines are similar in many points, and in noticing them I shall confine myself to a description of one which will serve as a type of the whole; it is likewise the machine which appears to me most perfect in its organization, and the only one of whose performance I have seen large specimens.

A heated iron bar, about the width and thickness of the intended nut, is advanced over a die-box of the exact shape of the periphery of the nut to be made. A die then descends, severs a blank from the bar, and forces it into the die-box. This die is bored out precisely to the same size as the aperture required in the nut, and, as it carries the blank along, forces it, still enclosed in the box, against a cylindrical punch, which punches out the hole, carrying the disk it severs, and finally entering, itself, into the aperture in the die.

This die, with the nut now punched out, and upon the punch in front of it, still advances until it brings the nut in contact with the face of another die, which, like itself, fills the die-box, and commences to move in the same direction as the first die is travelling, but with a less velocity.

The nut is therefore submitted to powerful pressure between these two dies while still on the punch, and all cracks incident to the cutting or punching of it are thoroughly welded up, while the exterior of the nut is forced so strongly into the moulded faces of the dies that, when discharged from the machine, it is nearly equal in smoothness to a nut that has been planed.

Actual experiment has proved that the compression is an essential part of the operation, and that nuts merely severed and punched are not only rough in appearance, but are so filled with cracks as to be unable to withstand the strain to which they must be subjected.

In an improved process for making axes, the workman cuts from a bar as wide as the narrowest part of the axe, and half its thickness; below the pole, a blank twice as long as the distance from the inside of the steel pole to the inside of the edge. This blank is, by appropriate machinery, first flattened, and consequently widened at the points which are to constitute the sides of the eye, and finally at those points forged into two half eyes, and, as far as the outside is concerned, into precisely the shape of the sides of the finished axe.

By means of a species of shears, this blank is now cut nearly in two at its centre, the line of the cut being perpendicular to the length of the blank, and the cut being made from the surface which is to form the outside of the axe. The two halves are now doubled on each other, heated, and welded each to each. The edge is then inserted, the steeling at the pole welded on, and a finisher completes the instrument.

Those concerned in the trade will appreciate the simplicity of the new method, and the easy manner in which it overcomes the difficulties incident to the old process.

A machine which forms perfectly the thimbles, so termed, used in large quantities in the rigging of vessels, has been patented. These thimbles are metallic rings, or short cylinders, whose outsides are grooved, and whose insides are convex to the same extent that the exterior is concave. In the machinery for making them, two shafts are so arranged as to revolve at the same time and in the same direction, and have a common axis. They are also so fitted that, while revolving, they can be made to approach or recede from each other. The contiguous ends of these shafts are each provided with a forming disk, whose diameter is least upon that side of it which is at the end of the shaft, and gradually increases in a concave curve to the other side, which is of a diameter equal to the greatest inside diameter of the thimble to be formed. Each disk exactly fills one half of a finished thimble, and when their adjacent sides are, by the motion above ascribed to the shafts, brought in contact, they entirely fill a finished thimble. A hammer, whose face is an exact counterpart of about one-quarter of the outside of the thimble, is arranged in such manner as to strike repeated blows upon a piece of iron sufficiently heated, and thrust in between it and the disks above cited.

In the working of the machine a lever is moved which brings the disks in contact. A piece of iron, in length equal to the circumference of the thimble to be made, is then introduced between the disks and the hammer. The disks then revolve, and the hammer forces the iron into the groove, and at the same time bends it into a circular form.

As the disks revolve, new surfaces are brought under the action of the hammer, and a thimble is finally formed, closely enclosing the two disks. These are then separated by the action of the lever, and, as they revolve on horizontal shafts, the finished thimble drops down between them.

The thimbles formed by this machine are not only cheaper, but better finished, smoother, and more regularly shaped, than those made by hand.

In another machine, emanating from the same inventor, the forging of iron into a certain class of shapes, is performed with expedition and certainty. In this machine a roller is mounted upon a carriage, in such a manner that a large portion of its periphery projects outwards, free from the carriage.

Two such carriages, each with a roller, are located opposite to each other, and are capable of being moved by machinery back and forth through a certain distance; each roller being opposite to the other, and located between its own and the other carriage. These carriages are, by means of guides, forced to move in curved lines of any given shape, and these guides can, while the machine is in motion, be forced to approach or recede from each other.

An iron rod properly heated is, while the carriages are in motion, placed in a check or tongs capable of revolution on a centre in such manner that the rod passes between the two carriages and their rollers. The carriages are now caused to approach, and as they approach they reciprocate, and their rollers touch the rod; the latter commence to revolve and draw out the iron. The rod is also revolved continuously or through a given arc, and then stopped and moved again. By a continuation of these motions, figures of revolution, generated by various curves or figures of polygonal cross section, and regularly irregular longitudinal section, are forged out with great speed and precision.

An automatic machine for performing, on a large scale, the well known metallurgic operation of spinning up cups, platters, and such like articles, from a flat disk in a lathe, is also worthy of notice. In this machine large copper kettles, known in the shops as brass batteries, and usually shaped by repeated blows of a small hand hammer, are formed with great rapidity, and with a beauty and finish never attained by the hand-made article. A species of burnisher, sometimes provided with a friction roller, is forced, by means of curved slots acting in connexion with screws and guides, to travel in tolerably close contact with the exterior of a revolving conical mandril formed of cast-iron. The flat sheet of metal is clamped upon the apex of this conical-former, revolves with it, and is gradually, by the action of the burnisher, forced to conform exactly to its shape. Several formers, each deviating more from a disk, and approaching more nearly to the form of the finished kettle, are used before the operation is completed, in order to bring the metal gradually, and by successive stages, into its new shape, and avoid all straining that might be injurious to the finished article.

This contrivance is now in use. Its productions will speak for themselves, and will, on account of their superior beauty, have the preference over the old article, even if the inventor should not reduce the price to that extent which the labor-saving qualities of his machine would fully warrant.

The lock exhibited by Mr. Hobbs at the World's Fair, which, in connexion with the lock-picking achievement of the same gentleman, created so great sensation in this country and in England, was patented in its most approved form in 1851; its great feature of security having, however, been invented by, and patented to, the same inventor several years since. This lock is so intricate and complex, that it is perfectly impossible, without drawings, to give any good idea of its minor characteristics or of the mechanical arrangements which are absolutely necessary to its action.

As the feature upon which its unpickability (if I may so coin the word) depends seems but little known and less understood, I will endeavor to describe it: In an ordinary tumbler lock and bolt, which is a sliding piece of metal which has projecting from it a pin, this pin, when the lock is on the door, usually projects horizontally towards the face of the lock. Between the bolt and this same face lie one or more thin metal plates which slide up and down vertically, but cannot move horizontally. One edge of each of these tumblers abuts directly against the pin above named when the bolt is shot. Now, it is clear that, to move the bolt back, one must either break the pin or move the tumblers out of the way; but these are so long that they cannot be moved up sufficiently far to let the pin pass below them, nor down far enough to let the pin pass above them; the top or the bottom of each tumbler, in the one case or the other, striking the lock-rim, or some firm stops, which prevents its further motion. Each tumbler has, therefore, cut in it a long, nearly horizontal, slit of the precise width of the pin, and if by any means each tumbler can be moved so that its slit comes opposite the pin, then will the pin enter all the slits at once, when the bolt is pushed back, and may be unlocked. If any one tumbler is lifted up too far, or not far enough, it will bar the passage of the pin, and the lock cannot be opened. The right key is so shaped that, when turned, its bits perform the duty of lifting

these tumblers. When a person skilled in the art, for so it may be termed, attempts to pick such a lock, he first, by some means, (a sharp-pointed crooked wire, for instance, introduced through the key hole,) shoves the bolt back until the pin bears forcibly against the faces of the tumblers. By means of another wire, he then shoves up or moves each tumbler separately until the sense of feeling tells him that the notch therein is opposite the pin. An increased facility of motion in the tumbler is one certain guide of this point being reached; or if the tumblers be weak and the pressure on the bolt strong, a click will be heard, and the tumbler may remain resting precisely at the proper point. As the proper position of each tumbler is ascertained, it is carefully measured and noted down. When all the positions are discovered, each tumbler is lifted and held at the right height, and the bolt is moved, the pin enters the slits and the lock flies open. This operation as described may seem easy, and it is so to those who, to a delicate touch and mechanical dexterity, add perfect knowledge not only of the principles of locks, but also of the construction of the precise kind of lock they intend to pick. Those who undertake to pick a lock without these requisites will find their task not only difficult, but absolutely unaccomplishable. Many ingenious attempts have been made by the locksmiths to obviate these defects, to render their locks and the doors to which they are attached impenetrable, withstanding the explosive force of powder, the battering of the sledge, the pressure of the screw, or the persevering ingenuity and practical skill of the lock-picker.

Either side, in its turn, has had the mastery; and as in the history of the defence and attack of fortified places, either the defender or the attacker has at times been certain of maintaining his own, or equally sure that he can conquer the strong-hold of his opposer, so at some periods have those who have the care of valuables placed perfect security in their doors and locks, and at others dreaded the attempt of some experienced burglar, to whom neither bolt, nor bar, nor metal door presented insurmountable obstacles, and whose mechanical skill was certain to obtain the prize he coveted.

The lock, whose great feature I am now essaying to describe, was the first that, to my knowledge, presented a certain barrier to the pick lock, however skilful; and doors that I will hereafter notice are the first which will completely withstand either drill or sledge. This lock is powder-proof, and may be loaded through the key-hole and fired until the burglar is tired of his fruitless work, or fears that the report of his explosions will bring to view his experiments more witnesses than he desires.

In it the pin on the bolt does not abut against the tumblers, but against other sliding pieces which cannot be reached through the key-hole, having between it and them strong steel partitions. These pieces may be termed secondary tumblers, and are furnished with slits like the tumblers first named in this section. These secondary tumblers are connected with the true tumblers, through the agency of slender springs, in such manner that the true tumblers will raise the secondary just as they themselves are lifted, when no obstacle obstructs the movement of the secondary tumblers. Now if the lock be locked, and the proper key applied and turned, it first lifts the true tumblers to the proper height; these, while being raised, lift the secondaries by the springs

until their slits are at the proper height, when the pin enters, and the bolt is retracted by the further turning of the key. If the lock be locked, and an attempt is made to pick it, the bolt is first forcibly shoved back until its pin strikes the edges of the secondary tumblers; its pressure upon these prevents the light springs from moving them, and the burglar may move the true tumblers up and down, amusing himself as long as he desires, without altering at all the position of the secondary tumblers, or obtaining any indication as to the locality in which they must be placed before the bolt can be moved. The partitions above named prevent any direct application of force to the secondary tumblers, and unless the former can be blown or drilled away, which many years' test has proved impossible, the lock stands impervious to any instrument except the proper key.

Another lock is so constructed that when the key-hole is open no access can be had to the tumblers. When the key, which is merely a series of bits without a pipe, is introduced, a knob is turned, which revolves a disk inside the lock which covers the key hole, and as it revolves further, the key-hole remaining shut, uncovers the passage to the tumbler. A cam on the spindle of the disk then lifts the bits and carries them in contact with, and finally lifts, the tumblers. The bolt may now be withdrawn, and a further turning of the knob repeats these operations in reverse direction and order, finally leaving the bits under the now open key-hole in such a situation that they may be withdrawn. It appears to me that this lock cannot be picked, and that its construction is such as to bring into play the doctrine of chances, which Bramah and Chubb have both claimed, fallaciously, as being the true exponent of the difficulties of opening their locks by other means than the true key.

An improvement in the tumblers, or rather the manner of supporting the tumblers of locks, has been patented. In ordinary tumbler locks, each tumbler moves in a certain determined plane and no other, and must be moved by a pick or key to a fixed and certain point, neither beyond it, nor short of it, before the bolt can be moved.

In the present lock each tumbler is free to swing, and can be moved in many planes, but must be moved precisely to the right spot, and in a certain plane, before the bolt can be operated. A lock picker must therefore, by repeated trials, find the proper plane of motion of each tumbler, and, by some instrument, hold each in that plane, before he can proceed to pick the lock in the ordinary manner. It is evident that longer time and increased skill will be required to pick this lock, when contrasted with the ordinary tumbler lock.

A very curious, novel, and it appears to me, unpickable lock has also been patented. The key-bit of this lock is composed of a series of closely packed cylindrical disks of different sizes. The key hole is a small cylindrical cavity closed at the bottom, and when open has no connexion with the tumblers or any part of the interior of the lock. The key bit is attached to the handle by a spring connexion, and when the operator introduces them and commences to turn the key, the first operation of the lock is to separate the bit from the handle; as he turns, the former is carried in the cylindrical opening away from the handle; a solid metal block occupies the place of the cylinder; the key-hole is entirely closed; the bit moves on and lifts the tumblers, and, by a continuation of the turning motion, the bolt is finally retracted. A reverse motion of the

handle shoots the bolt, drops the tumblers, carries the key-bit beneath the handle, reattaches it thereto, and, when the latter is withdrawn, the key aperture is again in its place and exposed.

Powder enough to fill the cylinder is all that can be introduced into the lock, and its explosion therein damages it no more than it would a pistol barrel of the same size.

This latter lock has attracted much attention. It is simple in its details, has no long trains of motions depending on each other, is not liable to get out of order, and has, when locked and unlocked by those unacquainted with its operation, been productive of no little mirth. It, as I have attempted to describe, fairly steals the bit away from the handle, and leaves the latter only in the grasp of the astonished experimenter, who, as he turns, finds the lock unlocked, but the key proper gone, and every aperture into the lock completely closed. Until he is undeceived, he is apt to imagine that the whole affair is some juggler's apparatus, constructed for his mystification, and not for legitimate use as a door fastener.

Either of the three locks thus noticed, when placed on doors which have also been patented, and will now be described as intelligibly as is in my power, appears to me to afford perfect security against all known methods employed by burglars.

The door first patented is constructed as follows, namely: by supporting, at some fixed distance apart, and attaching to each other, two plates of sheet iron, with a rim between them, which, with the plates, completely enclose a space and form a sort of iron box. Into this space No. 3, or white pig, is poured when melted, which fills the space, encloses the bolts which connect the sheets, and enters apertures left in either of them. The whole forms a door in which the sheets firmly support and prevent the breaking of the thoroughly chilled and hardened interior, while it in turn forms a complete stopper to all drills and cutting tools which may, by burglars, be made to perforate the outer sheet.

In another door, invented to meet the same requisites, and to present a bar to that class of ingenious operators whose acquisitiveness has generally contrived ways to circumvent the utmost ingenuity of the lawful dealing workman, pig-iron of the same character is cast around a wrought iron gauze or net-work. This net work is made of the size of the intended door, with meshes about one and a half inch square, and is constructed of bars of small round iron. All attack by drilling is prevented by the chilled cast-iron, and, when the door is assailed by a heavy sledge, this iron breaks into small pieces, each of the size of a mesh, the fracture being along the centre line of the iron rods, and each fragment being firmly held in place by the groove formed by its junction with the bars which surround it. The door, by repeated blows, becomes pliable, yielding, and is bulged in here and there, but the strongest man has not yet been able to make any absolute break therein.

In the sub class of nail machines, one has been patented in which the distinctive characteristics consist in cutting a wedge-shaped blank from a heated rod whose width is nearly equal to the length of the nail; this blank being carried by the cutter against an anvil in such a manner that the pressure is made upon the parallel faces of the blank, so that the shape is given to the nail partly by the cutting and partly by the pressure or moulding. The machine, therefore, makes a nail partaking of the

distinctive characteristics of both the wrought and the cast manufactured article; and while in cheapness it compares with the latter, it is said that in quality it fully equals the former. The arrangement of the machine is simple and compact; and a nail is cut, moulded, and headed at each stroke of the cutter, both advancing and receding.

A very ingenious machine for making horse-shoe or other wrought nails has also been patented. In this machine there is arranged in the interior of a revolving ring, and projecting towards its axis, a series of grippers, or pincers, each of which, when the machine is in full operation, grasps firmly a blank in all the different stages of progress between the rough rod and the finished nail. This ring revolves on its own axis, having an interrupted rotary motion always in the same direction, and the grippers between each rest of the ring, each revolve through a quadrant on their own axes, which are radii of the ring. Inside of the ring, and having axes coincident with it, are two rings carrying each a corresponding set of dies—one for every blank. These dies are arranged at different distances from the axes of their respective rings, the greatest difference being the length of a finished nail; and those attached to each ring are divided into two complete series,—the one of narrow face being forgers, and the other much wider acting as finishers. The radial distance of these dies from their common centre is so graduated that each in succession acts upon a portion of the blank nearer to the point, the head thereof being held in a gripper. When the gripper ring is stationary these series of dies approach each other, and each die gives a blow to the blank presented to it. The last gripper in the series then drops a finished nail, and the first is provided with a new blank. The gripper wheel, or ring, commences to move, each gripper makes a partial revolution on its own axis, and while so doing is advanced the distance between two dies, presenting its blank, turned a quadrant on its axis to the secondary pair of dies, which again approach, as does the whole series, and act on the nail nearer its point than before. These motions are continually repeated, and the nail is forged out as if by the pane of a hammer, or by one with a narrow face, and then finished as if by blows with one of a comparatively wide face. The machine is very compact and elegant in appearance, and its motions are obtained with no great complexity of machinery.

An improvement has been made in feeders of nail-plate to the usual nail-cutting machine. The apparatus is simpler than many that have been contrived, and may overcome the practical difficulties which have hitherto attended these machines. Its chief characteristic is in giving to the nail-plate an interrupted but complete rotary motion in the same direction, instead of the partially rotating motion in opposite directions, which has hitherto been employed. It is obvious that fewer mechanical devices, or a more simple train of mechanism, will produce the new motion, and that its actual effects, as far as the proper presentation of the plate is concerned, are substantially the same as those produced by the old machines.

An improvement in the adjustable sliding wrench merits notice, as by means of it much time may be saved when operating in succession on bolt-heads or nuts of varying size. The parts in this contrivance are so arranged that by pressing a spring attached to a dog or latch, the moving jaw may be slid and clamped pretty nearly at the precise point wanted.

The usual screw and nut arrangement then comes into play, and the precise adjustment of the distance between the jaws is thereby effected. With the ordinary arrangement, when desiring to increase or decrease the distance between the jaws an inch, it is necessary to turn the screw as many times as the pitch of its thread is contained in an inch. With the new arrangement, the spring is pressed, and the jaw is slid within a short distance on either side of its desired situation, and a portion of a turn of the screw, either back or forwards, attains the precise adjustment required.

There has also been allotted to me for examination an ingenious machine, which does not perform any metallurgical operation, but which has been examined by me, as nearly allied to many of the machines used in the manufacture of nails or pins. This machine sorts pins from a confused mass, arranges them in certain order, and finally sticks them into a fillet of paper. This fillet is long, and in width only a little greater than the length of a pin; one end of it is delivered to the machine, which, in addition to the duties above-mentioned, crimps this fillet, holds it in position for the reception of the pins, and finally rolls it up in coils whose periphery is nearly cylindrical, and from one of the heads of which project the heads of the pins. This coil forms in effect a pin-cushion, sustains and packs the pins quite as well as the ordinary method of papering, and has the further advantage that it presents to the user the heads only of the pins, while it enables him to withdraw them with more ease than if put up in the ordinary manner. The machinery is comparatively simple, and is interesting, as showing how great an amount of ingenuity may be profitably expended in improving one single branch of the manufacture of such a very simple article as a pin.

STEAM AND GAS ENGINES.

With this machine, my notice of the patents under the class of metallurgy closes, and I proceed to some slight descriptions of the more interesting of those examined under the class of *steam and gas engines*. In this class, 27 patents have been granted during the present year; 21 were granted in 1851; and those noticed are, as in the other classes, drawn from the records of either year.

Among these may be described an arrangement of the flues or tubes in steam boilers. In it the flame enters a flat horizontal flue, and passes thence down through tubes into another flue, directly below the upper one, and from thence to the stack. Each of these tubes is surrounded by water, and contains within it, and concentric to it, another tube filled with water, which is in connexion with the water space above the crown sheet of the upper flue, and the water space below the bottom of the lower flue. The spaces through which the products of combustion pass from one flat flue to the other, are annular. A great amount of surface is thus secured in a comparatively small boiler.

An ingenious and strictly practical improvement in float water gauges has been patented. In this arrangement a chamber—usually a tube of large bore, and vertical in position—is connected by branch pipes to both the steam and water spaces of the boiler, said branches being respectively some distance above and below the usual water level. This metallic tube is closed at top, and its bottom, below the lower branch connexion, is firmly cemented to a glass tube, extending far below the water level,

and closed at its lower end. The upper tube has within it a float, from which descends an index rod into the glass attachment. This index, owing to the absence of circulation in the glass tube, is always moving in water comparatively clear, which being also, by virtue of its position, comparatively cool and unchanging in its temperature, has no tendency to corrode or deposit upon the glass, or to fracture the same through sudden changes of temperature. The index, therefore, is always visible, and the chances of disruption of the apparatus are much lessened in comparison with the ordinary glass gauge.

An ingenious improvement in water and steam gauges, which enables the height of the water to be indicated at any distance above the boiler, while the same apparatus at the same time indicates the pressure of steam, has also been protected by a patent. To accomplish this object, a long syphon-shaped pipe of glass at its bend, and some distance below the same, is attached by one leg to the water space near the bottom of the boiler, and by the other leg to a pipe proceeding from the steam chamber, and bending slightly downwards, until it meets the syphon leg. Both legs are filled with water nearly to the bend, which, with a few inches of pipe on each side thereof, contains air. As the water falls in the boiler, the water in the first named leg being freed from a certain portion of pressure which is due to the height of the water in the boiler, and irrespective of the pressure of the steam, falls with it, and the water in the other leg rises, the nearly horizontal piece of connecting-pipe before mentioned being kept full by the condensation of the steam.

The difference in actual height of a mean point between the upper surfaces of the two columns of water always affords a correct indication of the height of water in the boiler. Now suppose the water level in the boiler to remain unchanged, but the pressure of steam to increase, each column of water in the syphon legs will then rise equally and compress the air between their upper surfaces, while their mean height remains unchanged. The actual length of the column of air will diminish, and its whole length from water to water, in each column, estimated by a scale, will indicate the pressure to which the steam in the boiler has arrived. Another gauge for water level only is so contrived that this level may be exhibited at any point above or away from the boiler. This gauge, like the former, depends for its action upon the variable effective length of the two legs of a syphon, one of whose ends is connected to the boiler below the water level, and the other is attached to a short, nearly horizontal, pipe connected with the steam space, and filled constantly by the condensation of steam therein. As the water rises the effective length of the first-named leg is of course decreased, while that of the other remains constant. Just below the bend of the syphon a reservoir of mercury is introduced into the tube, in such manner that the surface thereof is in contact with the water in the parts of the tube, both above and below it, and prevents the passage of water from one part to the other. This mercury, therefore, as pressure is varied on one part of its surface, and is constant on the rest, rises and falls in the rising part of the syphon above it, as it would in an ordinary barometer, and its surface in the tube correctly indicates at all times the height of water, and is in no wise effected by the pressure of steam in the boiler.

Both of these gauges have been applied in practice, and the latter in several instances. They both work as well as their theory would indi-

cate. The former indicates correctly the height of water, but requires that the engineer should observe two surfaces, and take their mean. Its indication of the pressure is not so reliable as the distance between the two surfaces of water in either leg of the syphon, and varies not only in proper proportion to the pressure, but to the temperature also, and is further affected by the absorption of the air by heat. The inventor has, I am informed, made changes which obviate the difficulty which arises from the absorption, and has materially improved not only the efficacy but the compactness of the apparatus. In the last-described gauge the water level in the boiler is indicated by the position of the mercurial surface only, and can be read at a glance. It is said to be perfectly accurate in its indications, and has been employed at a level of twenty feet above the boiler, and there tested by comparison with gauge cocks and glass gauge-tubes directly attached to the boiler.

The importance of either of these instruments appears to me obvious, as they are the only indicators, excepting the common float with a rod attached, which indicate above the level of the boiler; they are the only contrivances which give to the officers or engineers of a steamer a check upon the firemen, or stokers, without the necessity of visiting the fire-room. They may be located in the spar-deck of steam-ships, or on the hurricane decks, or in the pilot's-house of river boats.

Another instrument of the same class, which may appropriately be termed an outside float, consists of a cylindrical or other shaped reservoir, attached to the boiler by means of two spirally coiled or worm pipes. The space inside the reservoir connects, through the bore of the upper worm, with the steam space, and through the interior of the inner worm with the water in the boiler. These worms act as springs, and support the chamber at a height due to its own weight and that of the quantity of water it contains. The water level in the chamber will be the same as the water level in the boiler, as there is free connexion between the two. As the water falls in the boiler it will fall in the chamber, which will then contain a smaller quantity, and be reduced in weight. The springs will now lift the chamber precisely as its weight decreases, or if its weight be increased, by pumping up the boiler, will permit it to descend. The variations in the level of the chamber thus indicate inversely the fluctuations of the water level in the boiler; and if an index be properly applied, it will, in connexion with a dial, exhibit the precise water level at any given time.

An attachment to puppet valves has been patented, which derives its motion from the engine, and revolves, through a small angle, each valve while down on its seat and held there by the pressure of the steam. The valve spindle is, of necessity, free to turn in the lifter; and the apparatus appears to obviate a difficulty long acknowledged in the use of this species of valve, which, it is well known, are not steam tight when hot, if ground into their seats when cool.

A valve motion, capable of producing almost infinitely varied movements and stoppages of the valves of engines, has been patented, and deserves notice. Upon an ordinary eccentric, but outside of the collar, in the direction of the length of the shaft, are cut cog-teeth. This collar is provided with the ordinary eccentric rod, which, in this instance, is hollow; and on that rod is carried a small shaft, whose axis is parallel to the main shaft. The former shaft is free to revolve, and carries a small cog-wheel, whose teeth are in gear with those before described.

This shaft also supports an eccentric, provided with a collar and rod; the latter passing through the hollow in the main eccentric rod, and carrying the hook which takes in the pin of the rock-shaft arm. Now it is clear that the first eccentric will give to its rod its usual motion, and will also, by means of the cogs, revolve the secondary shaft, which, in its turn, moves its own eccentric and rod. This latter rod, therefore, gives off a compound or duplex motion, dependent upon the varying throws of the two eccentrics, and their relative position at any given time. A change of the relative diameters of the two cog-wheels will enable a competent mechanic so to modify the differential or the additional motion of the two eccentrics, as communicated to the single secondary eccentric rod, that the latter may move almost as if actuated by a cam of any desired form, while, at the same time, none of the jars incident to that contrivance are imposed upon the machine.

In the vertical engine, with piston rod protruding below it, which is in common use for driving propellers, an improvement has been made by so shaping and arranging the pillars which support the cylinder above the bed plate that they constitute the air-pumps and the condenser, thus effecting a material saving in space, while the enlargement of the pillars, to adapt them to their new use, adds to the firmness of the engine.

In the same engine is exhibited a neat arrangement for actuating the cut-off slide of one of the cylinders, the valve chests being set back to back, by a connexion from the slide-valve cup of the other engine; and the inventors have also so arranged a supplementary sliding valve in the side of the valve itself, that the engineer can, by means of it, work his engine with full steam throughout the stroke, without altering in any way the expansion gear.

An ingenious arrangement of the marine steam-engine has been patented by an inventor well known for his discoveries in this special field.

In this engine the piston rod takes hold of a cross-head lying in the plane passing through the crank; from the four ends of this cross head, if the cylinder be vertical and beneath the shaft, depend straps, which take hold of, and move up and down, a ring which surrounds the cylinder. This ring is governed in its motion by guides, and has surrounding it another ring, connected by two pivots, lying in a vertical plane, passing through the shaft. To points 90 degrees from these pivots on the outer ring are attached the two ends of a connecting rod, which rises on each side of the cylinder, and each of whose parts is bent toward the other, until they meet and are united, forming the stub end, which receives the brass which encircles the crank pin. This rod, as it is caused to rise and fall, oscillates with its ring upon the pivots, and at each oscillation passes into the split cross-head formerly named.

When the piston is at the bottom of the cylinder, the cross head almost touches the stuffing box, and the stub end, with the crank pin therein, is nearly in contact with the upper side of the cross-head. The engine, therefore, takes up no more room than the oscillator with a long stuffing box, and is free from the trunnion, which is the only objectionable feature in the latter engine.

The air engine, which is now, through the medium of the periodical publications of the day, receiving so large a share of public attention, was patented by the inventor in 1851. This engine, which at the present time is in the course of the most magnificent experiment on record, does

not depend for its novelty upon any point new in itself alone, but upon the combination of features which have hitherto been tried in various forms, and under various arrangements and combinations, but have as yet failed in meeting the requisites of regular, continuous, and efficient service. The subject is one which has for many years occupied the attention of the present patentee and of others, who have lost their time, expended their talents, and impoverished their fortunes, in the pursuit of that desideratum which is even at the present period not fully attained.

References to the published experiments of Stirling and others will indicate the vast amount of ingenuity and mechanical skill that has been applied to this subject, and will prove pretty conclusively that the theory of the engine is, since the discovery of the regenerator, no uncertain one, and that practical difficulties are all that remain to be surmounted.

Drawings and descriptions of the arrangement and construction of this engine have been so widely diffused that a reiteration of the latter without the aid of the former would amount to supererogation; but I will, for the benefit of those who may not have perused these accounts, notice briefly the points of principle upon which the engine depends for its action.

Air, when heated about 480 degrees of Fahrenheit's thermometer, has its elastic force doubled: if, therefore, air, at the pressure of the atmosphere, be enclosed and heated to that extent, it will exert a pressure upon the vessel in which it is enclosed of about thirty pounds per square inch, or would, if permitted to expand, fill at its initial pressure a vessel of double the size that it occupied before it was heated. Further, if hot air be permitted to pass through a series of metallic sieves, it will give to the first sieve a portion of its heat; to the next, a less portion; and this in succession until it leaves the last sieve and enters into the open air. Each sieve in the series will, therefore, be elevated to a temperature a little below that of the sieve which precedes it, and the last sieve in the series, if their number and area be properly adjusted to the temperature and volume of the hot air, will remain at a temperature elevated only a few degrees above that of the external air. If a current of unheated atmospheric air be now passed through the series of sieves thus heated in the reverse direction, it will, from the first sieve, take up a certain portion of heat; from the next, more; and so through the series, until it leaves the last raised to a temperature nearly as high as that of the charge of air which preceded it in the reverse direction. A small quantity of heat derived from some combustible will supply the deficiency, and the charge will thus be heated by caloric chiefly derived from the former charge, and left behind it, as it were, in the regenerators, on its progress to the open air. Any person may try this experiment by procuring a small quantity of fine wire gauze, cutting it up into pieces of an inch square, or thereabout, and piling upon each other some twenty thicknesses. Let the pile be now enclosed in a case or frame, and apply the whole to the lips in such manner that the issuing breath may pass through the series. After breathing a few times through the pile, the operator will discover, especially on a cold day, that the air which enters his lungs is nearly as warm as that which has left them, and he will have a forcible illustration of the manner in which heat is alternately stored and given out in the so-termed caloric engine, and will be able to appreciate the nature and duties of that part of the apparatus termed the regenerator.

In the engine as applied to a ship, two cylinders of the same length,

each closed at one end, are placed vertically with their open ends toward each other, the transverse section of one of these cylinder is about double that of the other, and each is provided with a piston, each piston being connected to the other in such manner that as one moves so moves the other, in the same direction and at the same speed. The bottom of the lower and larger cylinder is exposed to a fire; the top of the upper is provided with valves which are free to open downwards, and a pipe makes a free communication between them; the regenerator is located in this pipe. If the apparatus be made air-tight, the pistons placed at half stroke, and heat applied, the air will begin to expand. As it expands, it presses with equal force per square inch on each piston; but as the lower piston has the greater area, it will overcome the other and rise, having, beside, capacity for lifting a certain weight; and this is the power of the engine. As the pistons move upwards, the air from the upper passes through the pipe, through the regenerator, and enters the lower cylinder, where it receives heat from the heated bottom and is expanded. When the pistons arrive at the top of the stroke, a valve in the pipe is opened to the outer air, the weight of the pistons causes them to descend, the heated air passes from the lower cylinder through the regenerator, heating it, and through the valve into the air; while cold air enters the upper cylinder through the valves in its top. When the pistons arrive at the bottom of their stroke the valve to the air is shut, the air in the bottom of the large cylinder commences to expand, the pistons begin to rise, the charge of air which has entered the upper cylinder passes through the pipe, through the regenerator, and takes up the heat in it, then enters the lower cylinder, where it receives its last and sufficient addition of heat from the heated bottom. A succession of such alternations of the pistons giving off power on the up-stroke, and performing nothing on the down-stroke, is the working of the engine.

In the caloric ship four sets of cylinders are employed, eight in all, and the power derived from each set is communicated, by means of straps, lever beams, and connecting rods, to a single crank upon the main paddle shaft.

The ship has, at the time of writing, made two trial trips, of some twenty miles each, and has attained a moderate speed. A trip continued over many miles, and for many days successively, will, if successful, induce universal belief in the capabilities of the apparatus, and will verify the sanguine predictions of the inventor and owners, who will, in any event, be entitled to praise—the one for ingenuity, perseverance, and mechanical skill; the others, for faith in a proved theory, and for a confidence in ultimate success, which has involved immense outlay in that which is as yet an experiment.

NAVIGATION.

In the department of *navigation* some patents have been granted during the past year; these embrace among them all the usual subdivisions, and, as in other classes, there has been no particular prominence in any one branch, no special subject which appears to have attracted more than ordinary attention. Paddle wheels and propellers of various kinds have, as usual, occupied the greatest share of the time devoted by me to this class, and have also, as usual, served as the basis of a multitude of rejections. This subject has been so thoroughly explored and so completely

thought over, digested, and invented upon, that those unacquainted with its history are continually reinventing some old contrivance; and it is surprising that we are so well provided with plans for paddle-wheels and propellers of all species, while we are so little acquainted with the theory of the action of these contrivances, and can so unsatisfactorily account for the immense loss of power consequent upon their employment.

In this sub class I intend to notice only one invention, which was patented by a French inventor, whose object was partially to remove the resistance to the progress of the vessel under sail only, which is occasioned by the ordinary screw propeller. This plan has no relation to those which permit of alteration of the pitch or admit of the propellers being hoisted out of water, and is somewhat different from any hitherto essayed. The wings of this propeller are arranged in pairs, and are each of no greater width than the dead wood of the vessel in which the propeller is located. The first pair, if there be six wings, is attached to a hollow shaft; the second pair is fastened to another hollow shaft, concentric with and inside of the first-named one; and the third pair is secured to a solid shaft, also concentric to the first and located within the second hollow shaft; each pair lies a little behind the former in the direction of the length of the vessel, and their shafts are fitted with gearing and clamps, or their equivalents, in such a manner that the various pairs of propellers can be made to alter their angular distance with respect to each other, or be clamped at any specified relative position. This gearing is within the vessel, and by means of it the various blades are, when the propeller is to be used, spread around the whole periphery of a circle, so that each acts in turn and in the same position as in an ordinary propeller, where the wings have no motion with respect to each other. When, however, the propeller is no longer to be used, and sail is to be employed, then, by means of the gearing, the blades are revolved so as to fold the one behind the other, like the leaves of a shut fan, and the whole set are turned so that they lie in the line of, and are covered by, the dead wood, thus offering little or no resistance to the progress of the vessel. The engine is connected to the outer shaft in such a manner that it drives the whole of the shafts, without altering their angular position with respect to each other; the motion to produce this latter result being entirely independent of the former.

A method of fitting canal boats to be used for the conveyance of coal, &c., appears to present features of utility, and will probably lead to a material saving in the discharge of cargoes of that article. Beams are secured along the inside of the boat's ceiling for its whole length, from stem to stern, forming a species of continuous bracket round the interior of the vessel, at a distance of some two or three feet from the bottom. Along the bottom are laid rails, upon which a small car may be moved, and immediately over the car's top, from beam to beam, crosswise of the boat, are laid planks, which form the cargo deck, on which the coal, &c., are loaded.

In the process of unloading, one plank at a time is lifted up by crow-bars, and the cargo runs by degrees into the car underneath. This car, when full, is run along the track until free of the floor and then hoisted out as a bucket and emptied, replaced, run back, and filled again. All shovelling of the coal is saved by this contrivance; and it will probably be

adopted in boats which, after their passage through canals, discharge their coal for further transport into the holds of sea-going vessels.

An important improvement in ships' blocks consists in a new method of making them, without the use of a cutting engine capable of producing irregular forms, and yet sufficiently near to the shape which many years' use has so fully sanctioned. Two rings of wood are turned up in any ordinary lathe; out of each of these rings a strip, passing through the centre, is cut, leaving two portions of a ring, which, when brought together on their chords, form a sort of ellipse. Between their chords is inserted edgewise a strip of metal, which carries the pin-socket, and at its upper end is so forged as to constitute one-half the strap. Bolts attach firmly to each other, and to the metallic strip, the two portions of rings above described; and each compound forms one side of the shell of a block. The block is cheap, light, and strong, and promises to be at least equal in durability to the one now in ordinary use.

Another simple block has been invented. In its construction two flat disks, with grooved peripheries, are turned in an ordinary lathe. The sheave is placed between them, and its pin is at the centre of the disks which constitute the cheeks. Hoops of round iron are now forced over the cheeks into the grooves; these hoops enclose at the lower end of the block, between them and their respective disks, a small piece of sheet metal, which extends from disk to disk, separating them at an appropriate distance. On the upper parts of the hoops is forged a small eye, through which passes a bolt parallel to the axis of the sheave. This bolt carries between the eyes a sleeve or collar, whose length is just the required distance between the cheeks; and on it is forged an eye or hook, by which the block may be attached where required. It is evident that the hoops serve the purpose of the usual strap, while they at the same time prevent the cheeking or splitting of the cheeks, and guard their edges from chafing.

A very simple improvement in ships' davits has been patented: it consists in fitting their feet with a simple and secure species of joint, which permits of their being lowered and stowed against the bulwarks, while at the same time they can be replaced with ease and certainty, and without any liability to mistake or loss of time from fitting disconnected parts. By this arrangement all risk of breaking the davits is avoided.

A harpoon, which forces the point deeper and deeper into the whale as he draws the boat after him, has been invented and patented. In this contrivance the flukes are hinged, and so arranged that they can be latched to the point, or can slide away from it. The whale line is forked or split, and each part thereof is rove through a pulley or sheave attached to the flukes, and is thence led and attached to the socket or staff which is firmly fixed to the point.

When the harpoon is thrown and enters the whale, and strain is brought upon the line, the flukes spread out and take firm hold in the blubber, detaching themselves by such motion from the point. The pulleys, or sheaves they carry, are now fixed in the whale, and strain upon the line passing through them forces the shank and its point to slide between them, penetrating deeply into the whale. These harpoons have not yet, it is believed, been employed in actual service; but the simplicity of their construction, and the apparent certainty of their ac-

tion, warrant the conclusion that a single practical trial will establish their utility, and bring them into general use.

CIVIL ENGINEERING; FIRE-ARMS; MISCELLANEOUS.

The classes of *civil engineering* and *fire arms*, which have for some time past been under my charge, were, upon the appointment of additional examiners, transferred to one of my colleagues. In his report will be found notices of the inventions in these classes, as also in that of *general miscellany*, which was transferred at the same time.

In these classes, therefore, but few cases have been acted upon by me, and, as my report has already spread to a somewhat unusual length, mention will be made of two cases only: the one, a simple, but novel idea, which requires practice only to ascertain its merits; the other, a machine whose completion has demanded lengthened experiment, sound knowledge of physical principles, and no small share of tact and practical skill. The former is a plan for making a species of artificial conglomerate for paving the carriage ways of crowded cities. Fragments of some species of stone not easily affected by heat are packed into an iron or sand mould; they are then joined each to each, and the interstices between them are filled by running melted iron into the mould. It appears to me that this plan may remedy the slipperiness of iron or stone paving blocks, which is now a constant source of annoyance, and that its cost will be little, if any, greater than that of square stones. The unequal wear of the two materials will keep the surface continually rough; and experience will determine whether the stone is so deteriorated by the heat as to become worthless, or whether its strength is so unimpaired that the whole mass will constitute a useful and lasting pavement.

The other invention is the ice machine, which has, during the year 1851, received so much notice in the public prints. In its action common air is compressed by a powerful pump, and the heat it gives off during compression is taken up by jets of water. This air passes thence into a receiver, where it is thoroughly separated from the water, and from the receiver enters a cylinder provided with a piston, in which it expands gradually. Its expansive force is utilized by the agency of the piston, whose rod is connected with that of the compressing pump in such manner that the dilation of one portion of the air aids in compressing another portion just entered into the machine. As the air expands it cools or abstracts caloric from a supply of uncongealable fluid which surrounds the dilation cylinder, and also enters the same in a jet, and finally escapes into the outer air. This cold fluid then circulates around the pans containing water to be frozen, extracts the heat therefrom, and, when heated, returns again to be cooled in the dilation cylinder. The water is supplied gradually to the pans and is frozen, as it were, in strata from the bottom upwards.

An experimental machine, on a large scale, has been constructed and thoroughly tested. Bottles of sherry have been frozen therein, and blocks of ice, the size of a cubic foot, produced where the thermometer in the open air indicated eighty-odd degrees.

Those interested are firmly convinced that a ton of coal, expended in driving a steam engine to communicate power to the machine, will produce at least a ton of ice as an average product; and their recorded experiments and calculations, when submitted to the examination of scien-

tific men, have induced the latter fully to endorse their statements and confirm their expectations.

With this description closes my report for the year, which is respectfully submitted by your obedient servant,

HENRY B. RENWICK, *Examiner.*

Hon. S. H. HODGES, *Commissioner of Patents.*

SIR: In compliance with your instructions, I have the honor to submit the following report of the business transacted at my desk during the year 1852:

The number of applications received at my desk during the year is 409
The number of applications on hand at the close of the year 1851

was - - - - - 45

Making, in all, new applications to be acted on in 1852 - - - 454

Deduct from this sum applications transferred to other examiners - 11

Leaves applications to be disposed of at my desk - - - 443

Of these there were remaining at the close of the year - - - 79

Which makes the whole number of new applications acted on in
1852 - - - - - 364

Besides the above actions, there has been, with the increase of applications, a corresponding increase of patent attorneys; and, as a natural consequence of this, arguments for claims for reconsiderations of old rejected cases, and for and on all the matters that may be involved in legal and patent business. These circumstances, greatly enhanced by the growing importance of American patents, as compared with patents granted in other countries, have, as it were, by reaction, excited a new energy in all the patent attorneys and inventors to get claims of even the smallest points of invention, and have, by these means, greatly multiplied the amount of correspondence on returned cases, as compared with like cases in former years. There is, at the present time, scarcely a case rejected that does not come up for additional correspondence, modified, and presented anew, changing, in one way or another, the points claimed, so as to make it the subject of some two or more extra actions on the part of the Office. This increase of correspondence, technically called the *current business*, as it now exists, will be better understood from an example: The number of decisions on new applications during the year is 364; but the number of decisions on new and returned applications, in which written decisions were made, is 900. If we add to this 75 to 100 verbal hearings, that may occupy, according to the rules of the Office, one-eighteenth of all the time of the examiner during the hours of business, we shall find, as an average of the work done, more than three distinct laborious actions on every application made for a patent at my desk. The statement here given as the result of my own actions has nothing peculiar in it as applied to my case. It is, in the main, the experience of all the examiners. If it should happen, however, that any one acts on more cases this year than usual, it shows, as a matter of certainty, that he is to be involved next year in a proportionably increased

amount of actions on returned applications. Every application that comes before the Office must and will have, sooner or later, a thorough and laborious examination, provided the inventor thinks he can in any way get a patent; and he will prolong correspondence till he has exhausted the subject, or till he is referred to the remedy of appeal. It is, therefore, time and labor saved to make the investigation thorough at first; and then the other examinations will be comparatively light and easy.

From what has been now stated, it is clear that the number of decisions made at my desk is equal to three a day throughout the year, or equal to one every two hours.

Besides the increase of the current business of this Office relating to pending applications growing out of causes named, there has arisen, from the same causes, a corresponding increase of business from the efforts made to have patents (about to expire) extended. It is not uncommon for an extension case to occupy the examiner from *five to twenty* days, involving an amount of testimony varying from 300 to 3,000 pages. In some cases the Commissioner has admitted a hearing with oral arguments; but generally with written arguments. In some cases the whole labor has been thrown upon the examiner, and in others he has only shared it with the Commissioner; but in all cases the examiner's time is occupied. There has been examined, at my desk, one application for extension during the year. This increase of current business in the Patent Office must, as a matter of course, continue to diminish the number of new cases that a given examiner can take up in a given time. There is a very perceptible difference within the last three or four years in the ease or difficulty with which I could dispose of cases. In the year 1849, I was enabled, with less experience in the rules of practice than I now have, to act on 569 new applications with greater ease to myself than to act on 364 in 1852. Although some of the differences in the cases referred to may possibly arise from the character of the cases being more simple and easy to act on, yet the chief cause of the difference is, that more cases are now discussed and litigated than formerly. Parties are often willing to take worthless claims, knowing them to be such, for the benefit of a mere semblance of a protection; nor is this mania for American patents to be wondered at, when we take into consideration the fact that a patent, if it is worth anything, when properly managed is worth, and can easily be sold for, from ten to fifty thousand dollars. These remarks only apply to patents of minor or ordinary value. They do not include such as the telegraph, the planing machine, and the India rubber patents, which are worth millions each. A few cases of the first kind will better illustrate my meaning:

A man obtained a patent for a slight improvement in straw-cutters, took a model of his machine through the western States, and, after a tour of eight months, returned with forty thousand dollars in cash, or its equivalent. Another inventor obtained an extension of a patent for a machine to thresh and clean grain, and sold it, in the course of about fifteen months, for sixty thousand dollars. A third obtained a patent for a printer's ink, and refused fifty thousand dollars, and finally sold it for about sixty thousand. These are ordinary cases of minor invention, or at least embracing no very considerable inventive powers, and of which hundreds go out from the Patent Office every year. Experience shows that the most profitable patents are those which contain very little real invention, and are to a superficial observer of little value. These by multiplication

cause numbers to make up for the smallness of the profit in the individual case. The protection in manufacture of the article in one particular way, even without any invention from which to derive advantage, is enough to secure in many cases a little fortune, provided it only have the semblance of invention and be sanctioned by the name of a patent. It can then be sold for money, and the inventor, with cash in hand, escapes all after responsibility. It is the resistance of such claims as these on the part of the Patent Office (which may form the basis of a fraudulent transaction) that constitutes no small part of the current business on cases rejected and returned for reconsideration. This branch of the current business of the Office will increase rather than diminish; so that it will constantly require a greater and greater force to dispose of the same number of cases, unless the method of litigating claims be so modified as to cut short the correspondence, which is hardly to be expected.

There is another subject which I desire to present to your notice before entering upon the details of the report. It is the necessity of providing the chemical laboratory and apparatus, for which the late Commissioner asked an appropriation of \$800 in his last Annual Report. It was thought by him that an express appropriation by Congress was necessary for the purpose; but I am happy to learn that you construe the 14th section of the act approved March 3, 1837, relative to the Commissioner's powers in using the Patent fund, differently from the construction of your predecessor.

I therefore take the liberty to state, somewhat in detail, the necessity, the provision by law, and the manner in which it has been partly carried out.

It is required, as set forth in the 6th section of the act of 1836, that every applicant for a chemical patent shall accompany his application with "*specimens of ingredients, and of the composition of matter, sufficient in quantity for the purpose of experiment.*" But no provision was ever made to carry out the designs of the act, by furnishing a suitable place for a laboratory, or apparatus, or tests to experiment with; for the want of which patents have been granted that would have been refused, and others have been refused that would probably have been granted, if the Office had possessed the means of deciding by the *experimentum crucis*.

At the time of my appointment as principal examiner, in 1848, I took charge of the chemical applications; and as I was not provided with any means by the Office, and was unwilling to allow that cases requiring to be verified by experiment should be allowed to escape untested, I went to the expense of more than \$500, to procure such apparatus and fixtures at my own residence as would enable me to test such cases as required it. It is but justice to say that I have rendered the Patent Office essential service by means of this apparatus, by correcting mistakes and errors of various kinds. But in doing the Office this service, I have been obliged to encounter difficulties. I was compelled to remove the specimens to private apartments away from the Patent Office, incurring the danger of misplacing and loss; and was, moreover, compelled to perform all of my experiments mornings and evenings, when I needed the time for exercise and relaxation. I now feel that my health has been considerably affected by the number of extra hours I felt myself obligated to give to the laboratory, in order fully to discharge my duties to the Office. The experiments are often indispensable, and the want of room, which has been hitherto a prominent objection, cannot be so any longer; and I

trust, therefore, that you will feel warranted in making the appropriation of the amount named in the recommendation to Congress by your predecessor, for apparatus and materials for furnishing a laboratory, which I propose to occupy also in part for my other duties in the Office. I do not ask any compensation for the extra expenses of somewhat more than \$500, and for the extra hours that I have devoted to the business of the Office at my laboratory, but that I may be relieved from the necessity of doing it any longer.

Method of Reporting.—There has been hitherto but one method of drawing up the examiners' reports, as annually made to the Commissioner, namely: that of giving partial descriptions of what the examiner regards as the most interesting and important inventions, commenting at the same time upon their peculiarities or excellencies. This method of reporting was commenced in 1839-'40, and, with the exception of 1851, has been continued up to the present time.

As a bill is now before Congress looking to an improved method of reporting patented inventions, I propose to report the chemical patents—few of which admit of drawings or model—by a general description or definition of each case, so far as it can be done, and leave out commenting, except so far as to explain the invention. The other classes will be reported as hitherto.

Subjects of Examination.—The classes examined by me are mainly embraced in chemistry and agriculture. A few, being the returned applications of household furniture, (a class acted on by me three years ago,) have been also examined by me during the year; but these will require no further notice from me.

The whole number of applications at my desk passed for issue is—

Chemistry	-	-	-	-	-	-	-	-	-	-	48
Household furniture	-	-	-	-	-	-	-	-	-	-	5
Harvesters	-	-	-	-	-	-	-	-	-	-	7
Ploughs	-	-	-	-	-	-	-	-	-	-	25
Cultivators	-	-	-	-	-	-	-	-	-	-	14
Seed-planters	-	-	-	-	-	-	-	-	-	-	26
Rakes	-	-	-	-	-	-	-	-	-	-	3
Threshers and separators of grain	-	-	-	-	-	-	-	-	-	-	8
Hulling and smut machines	-	-	-	-	-	-	-	-	-	-	10
Winnowers	-	-	-	-	-	-	-	-	-	-	3
Corn-shellers	-	-	-	-	-	-	-	-	-	-	4
Straw-cutters	-	-	-	-	-	-	-	-	-	-	3
Beehives	-	-	-	-	-	-	-	-	-	-	2
Miscellaneous of agriculture	-	-	-	-	-	-	-	-	-	-	9

167

The whole number of rejections during the same time is - - - 256

It will be perceived, by comparing the number of chemical applications the past year with that of former years, that this class of inventions is increasing faster, proportionally, than most other classes. The fact that these applications are generally not represented by either model or drawings, renders them the most difficult and laborious applications before the Office. In all cases an examiner, if he does his duty, must know all

that has been done on the subject examined. But in this case there is no representation to guide the eye in the class he is examining, and he must get the naked facts by reading or experiment, and generally by both. Not unfrequently is he called upon to verify alleged or assumed facts by laborious and sometimes difficult experiments. I have occasionally been compelled to read more than a hundred foreign patents to decide a single application, and in other cases to continue series of experiments for several weeks in succession to decide a single point. On both of these accounts, I most earnestly ask to be relieved of a part of my agricultural applications, that I may be enabled to give that attention to the chemical applications which their rapidly increasing numbers and importance demand.

CHEMICAL PATENTS.

1. *Concentrated Beer Material*—consisting of the solidifiable matters of malted liquors, cautiously reduced to the solid state, to render them portable for re-solution, as needed.

2. *Gas Meter and Regulator*—designed to regulate the quantity burnt in a large establishment. It is designed to be used as an extra meter to be attached to a hotel or factory, &c., to prove or correct the Company's meter, and also to control and regulate the pressure at the burners. The amount of gas passing a given opening of the stop-cock, and at a given pressure, being first learned by experiment, the clock-work is wound up, and the meter set at work.

3, 4, and 5. *Gas Regulator*.—Three patents have been granted for three several modifications of this instrument. The instrument consists of an enlarged chamber in the service pipe, where it enters the consumer's building, and is generally placed near the Gas Company's meter. Each of the modified regulators is designed merely to equalize the size of the flame, while the number of burners is varied. This enlarged chamber in the pipe has a valve, which controls the amount of gas going to the burners, and thus divides the chamber into two compartments—one being on the side towards the street main, and the other on the side towards the burners. The valve is at one end of a small scale beam or lever, and counterpoised at the other by an inverted cup in a vessel of mercury. It is easily seen that if we vary the pressure on the external surface of the inverted cup or on the internal surface, we increase or diminish the opening of the valve, and thus admit more or less gas. In the first of these devices patented, the internal part of the inverted cup communicates with the side or compartment of the chamber towards the burners; in the second, it communicates with that towards the street main; and in the third, the construction is such that it communicates with both at the same time, and thus modifies and controls the amount of gas received through the valve in three several ways.

6. *Gas Meter*.—This is a slight modification of the ordinary wet meter. The design of the improvement is to preserve a continuous level of the liquid in the vessel. This is accomplished by having a separate chamber in the lower part of the meter, to receive the overflow from the main body of the meter, and this chamber is connected with the external air by a syphon which discharges the liquid outside.

7. *Explosive Compound for blasting Rocks*; which is a mixture of five parts by weight of chlorate of potash, two parts of red sulphuret of iron, and one part of ferrocyanuret of potassium.

8. *Bag-Screen Receiver for the manufacture of Zinc White*.—The gist of the invention consists in the combination of the bag screen with a blowing apparatus. The effect of the screen, which covers the whole chamber, is to prevent a rush of air to any one part of the bag, and thus prevent the filling up of its meshes, and also the escape of any considerable amount of the fine powder through the screen.

9. *Construction of Ink Canisters*.—Several of these vessels are arranged in a row, nearly in contact, and connected by syphon tubes, to be charged and discharged without disturbing the sediment, and at the same time aerate the liquid.

10. *Manufacturing Carbonate of Strontia or of Baryta, &c.*—The invention consists in the reduction of the sulphate of baryta, by heat and carbon, to the sulphuret of barium, and decomposing this in turn, after dissolving it in water, by a current of carbonic acid, and employing the sulphur liberated in the manufacture of sulphur or sulphuric acid.

11. *Manufacture of Paraffine Oil by distilling Bituminous Coal at a low heat—too low to be profitable for gas-making*.—In this process the retort is only at a very low red heat, and the products, received into a worm kept at 55° Fahrenheit, are a small quantity of gas and a large quantity of paraffine oil. The liquid product is purified by sulphuric acid and soda in succession, and then washed with water and neutralized by chalk, and finally settled.

12. *Manufacture of Candle Wick*.—This consists of several twisted strands, each composed of two or more yarns, so twisted together that, as they burn away, the tendency of each separate strand is to untwist and burn loose.

13. *Parti-coloring Yarn*.—This is a reissue. The invention was patented in June, 1850, and is confined to the construction of the dipping reel.

14. *Mash Tun*—The invention consists in having the mash tun closed in on every side by a thin film of water, in place of wood, metal, or any other substance.

15. *Construction of Mash Tun*.—*Additional letters patent*—consisting of a device for forcing air to the bottom of the mash tun to cool the mash. The air is forced through the steam pipes which constitute the agitating rakes. They are made hollow, in the first instance, for heating the mash with steam; afterwards air is forced through the same pipes to cool the same liquid.

16. *Apparatus for cooling Wort*.—Consisting of a low cubical box, or case, containing a shallow metal pan, having parallel, narrow, and deep recesses extending to the bottom of the case, for receiving the wort, which wort enters the shallow pan and recesses on one side of the apparatus, and, after passing through the whole series of segments of shallow pans and recesses, passes out on the side opposite to that at which it entered; while at the same time a current of cold water enters the case on that side at which the wort is discharged, and, passing in the opposite direction, is discharged on that side where the wort entered. The wort and the cooling liquid are separated from each other in the case by a thin sheet of metal; and while the water is warmed, the wort is cooled to the proper temperature.

17. *Cement of Lime, Rosin, and Water*.—Made by mixing in half a bushel of pulverized slacked lime one fifth of a bushel of powdered

rosin, with water sufficient to make the whole into a stiff mortar or paste, for a water-proof cement.

18. *Factitious Oil*.—Consisting in a mixture of spirits of turpentine, 9 gallons; benzole, 1 gallon; carbonate of potash, 6 ounces; glycerine, 2 pounds; and to every gallon of this mixture add 19 gallons of whale oil; designed for lubricating purposes.

19. *Condensing Apparatus for an Alcohol Still*.—This device consists of a two-storied worm-tub, and a valve opening between them, to control the heated water and keep it in the upper tub till the temperature reaches a certain point, when the heat will bend a spring and open the valve, and allow cold water to ascend through the same.

20. *An arrangement to work two Stills with one Condenser*.—The invention is confined to minor points, that need not be described.

21. *Retorts for Chemical Furnaces*.—This apparatus cannot be easily described without a drawing. It consists of a long range or bed of retorts and a specific arrangement of flues from other furnaces.

22. *Treating Gutta Percha preparatory to Vulcanizing it*.—The material, properly cleansed and prepared, is heated to 285° or to 430° Fahrenheit. The inventor disclaims vulcanizing except when in combination with the preliminary treatment.

23. *India Rubber Cotton Bat Cloth*.—The invention is mainly confined to specific mechanical devices for making a rubber or percha bat texture pervious to air, but nearly impervious to water, by covering the pressure rollers with an elastic thickness of felt, flannel, or its equivalent, or running the felt over the rollers in the form of an endless apron, that receives the bat spread over its surface, and the plastic prepared gum to be forced into the pores of the bat, by means of the elastic bed of flannel or felt underneath it. When this compound bat has been run through the rollers, it becomes a porous, nearly water-proof, but not air-proof, texture, very valuable for many purposes.

24. *Process of preparing Oakum*.—The inventor treats junk with water at a temperature of 75° to 100° Fahrenheit, and containing one to three per cent. of any mineral acid, for half an hour or an hour. The inventor generally uses sulphuric acid. By these means the fibres are more easily separated from each other, and the labor of picking very much facilitated.

25. *Construction of a Soap-boiling Apparatus*.—Consisting in the agitating pins extending down to near the bottom of the kettle, and rotating by machinery, in combination with steam-heating tubes projecting vertically through the soap from the bottom jacket, and serving to heat the same, while the pins perform the agitation. It is this arrangement of heating-tubes and agitators that is claimed.

26. *Process of preparing Archil*—This is a coloring matter from the lichen rocellus, obtained by treating it in a particular manner by means of urine, ammonia, and clear saturated lime water, in the manner set forth in the specification.

27. *Factitious Marble*.—The invention consists in mixing with a cement of earthy matters, as plaster of Paris, flock of colored fibrous matter, as silk, wool, cotton, &c., so that the fibres shall indicate veins, giving it a veined or marbled appearance. The composition used in this case is a mixture of rosin, 4 parts; wax, 1 part; glue, 6 parts; alum, 4 parts.

28. *Sugar Manufacturing Apparatus*.—The invention is chiefly confined to minor points, in the construction of the evaporator, that could not be described without a sketch.

29. *Sugar Evaporating Apparatus*.—The principal feature in the invention is confined to the device for removing the froth. It consists in what is called a *scumming wheel*, which, by a peculiar arrangement of the floats, carries away the scum as fast as it makes.

30. *Sugar Evaporating Apparatus*.—This is the product of the same inventor as that last described or referred to, and embraces two prominent features. The apparatus consists of a long range of evaporators, with the fire at one extremity and the chimney at the other—the flue running from end to end. One of the two features here referred to is a peculiarly constructed wire-gauze wing, arranged to vibrate on a hinge joint in the last evaporator next to the fire, so as to prevent forming bubbles, and moved by machinery. The other feature referred to is found in the evaporator nearest the chimney, and consists of an arrangement of a floating buoy stop-cock for self-supply of cane juice, and a trough arranged across the evaporator to receive the scum that is floated towards it by the current created in the liquid.

31. *Process of manufacturing Soda Ash*.—This consists in the making of the “*black balls*” by means of sulphate of soda and carbon, without using lime, in the reverberatory furnace, and then decomposing the aqueous solution of the product by forcing carbonic acid through the same, boiling to dryness, and exposing the resulting mono-hydrated carbonate of soda to an atmosphere of carbonic acid, by which it is converted to the bicarbonate of soda, retaining the same amount of water of crystallization as it had of constitution in the first instance, so that there is the same amount of water in the evaporated product as is necessary to convert this salt into the bicarbonate of soda.

32. *Benzole Compound Burning Fluid*.—This is the material that has been often noticed in the newspapers of the day, under the name of the *Benzole light*.

The invention consists in mixing two measures of alcohol and one measure of benzole, and adding about one measure of water, which, on the mixture being made, is violently agitated; and while the particles are thus mechanically separated from each other, sponges, placed in a suitable vessel, are charged with the mixture; and air being then forced through the sponges and out at the burner jet, will carry along enough of the vapors of the combustible compound to take fire and burn with a bright flame on the application of a lighted taper.

33. *Soap Compound*.—Consisting of the ordinary ingredients of soap, in which are mixed kaolin and ammonia, or carbonate of ammonia; the gist of the invention being confined to the use of the ammonia held to the compound by means of the attraction of the kaolin, as pointed out by Liebig in his work on Organic Chemistry, as reported to the British Association for the Advancement of Science.

34. *Process of working Gas Retorts*.—Consisting in charging coal-gas retorts, at the time the coal-gas begins to deteriorate, with the condensed overflow of gas tar, or other similar matters, as asphaltum, bitumen, or oleaginous matter, which will resupply the coked coal therein with the needed bituminous matter, as contained originally in the coal with which the retorts were first charged.

35. *Packing Butter in a weak solution of Iodide of Potassium.*—The article is put into tin canisters and surrounded with a film of solution of the salt in water in the proportion of a drachm to the half pint of water.

36. *Reducing Gold Mineral by a cer ain Flux, and stirring the same with an iron rake.*—The inventor fluxes gold quartz with silicious, calcareous, and aluminous materials; the metal falls to the bottom by gravity; the flux and metal are drawn off by themselves. When the metal does not deposite well, it is stirred with iron rakes, and to these the metal adheres.

37. *Mixing Paints in a Watery Solution.*—This device consists in mixing paints with a watery solution of sulphate of zinc, the inventor alleging that the paint so prepared spreads better under the brush, and dries harder, and can be laid on thinner, so as to cover a much greater surface.

38. *Pres rving India Rubber in the liquid state.*—This is effected by allowing the juice to flow from the tree into a vessel partly filled with a pure solution of common salt.

39. *Process of manufacturing Sulphuric Acid*—The inventor concentrates the acid in leaden vessels, and below the boiling point of the strong acid. Besides this the inventor uses a very long condensing pipe, some eighty feet in length, to condense the gases, and finally discharges its contents into the discharge cistern, where an agitator aids in absorbing most of the gases.

40. *Composition Enamel free from Tin and Lead.*—The invention consists in the use of a glass having neither lead nor tin in its composition, but containing a certain amount of lime, or its sulphate, namely: of the glass, one part; lime, or sulphate, one-fourth; common salt, one-eighth. Now thoroughly pulverize and grind together with sufficient water to make it into a cream consistence, and paint it on the ware with a brush, and afterwards expose it to the heat in the enamele's oven, or furnace, in the usual way.

41. *Coating Iron with Copper*—The metal is first cleaned in the ordinary manner with dilute sulphuric acid, and with some of the acid on it left exposed a few days, to let it corrode and rust, in order to form a rough surface; it is then brushed over with solution of sal ammoniac and immersed in a bath of zinc; then into a bath of copper, and held there till it ceases hissing; then withdrawn and cooled to a cherry red, when it is found coated with copper. If we want a thicker coat, it is then dipped again in the sal ammoniac while at a cherry-red heat, and then in the zinc, and in the copper, as before, till the thickness of copper is attained.

42. *Gas Retort and Condensing Tubes cooled by Air.*—This invention can only be given approximately, except with the aid of a drawing. It consists of a vertical cylindrical retort, nearly filled with shelves, for holding liquefiable gas making materials, all communicating with a central passage to the lower chamber and exit-pipe; which last, on leaving the retort, makes several turns, and is enveloped in a larger pipe, connected at one extremity with the chimney draught, so as to draw through the said larger pipe a current of cool air, and thus cool the condensing apparatus of the gas generator.

43. *Bottle Stopper.*—This invention is substantially a combination of the puppet valve with an ordinary decanter top—the stem of the valve

being guided in a little frame, and capable of a reciprocating motion of a confined range—so that, when this valve apparatus, enclosed in a tube, is slipped, with a close fitting, into the mouth of an upright decanter, the valve rests on the mouth and closes it. But when the decanter is turned down, as in the act of pouring, the valve slides out to the extent of its range and the liquid flows. When the vessel is set upright the valve drops back into its seat and closes the mouth.

44. *Bottle Stopper*.—This is a modification of the one last described, but differs from it in having its valve of the form of the old-fashioned tin coffee-pot lid, and sliding out and in on a fixed stem, and so loosely as to admit of a wobbling motion. It is used in the same manner as that previously described.

45. *Process for preparing a Paint Material*—which consists in treating 100 pounds of serpentine rock with 25 pounds of sulphuric acid, 25 pounds water, and 10 pounds of prussiate of potash, dissolved in 40 pounds of water; decant the sulphate of magnesia produced, and wash out the soluble parts. The blue pulpy matter left is the product used for a paint.

46. *Furnace S'ag Ware*.—This invention is confined to tempering and working the slags of iron and other furnaces, softening, reheating, and otherwise purifying and treating the materials.

47. *Process of preparing Chromate of Soda*.—This consists in treating the chrome iron-ore with its own weight of common salt, in a reverberatory furnace, (or for chromate of potash, treating the ore with a like proportion of muriate of potash,) at a high heat for ten hours, and supplying the same with a jet of steam, &c.

48. *Process of generating Illuminating Gas from wood and rosin mixed*.—The gas from wood, in part of the apparatus, passes through condensing pipes, and then into another part of the same generating apparatus, containing the rosin gas generator, where the mixed gases meet and are purified by passing over fragments of heated iron in the same vessel.

AGRICULTURAL PATENTS.

It will be perceived, simply by inspecting the tabular statement of the number of patents granted in this class, that seed planters and harvesters of grain and grass take the lead. They embrace nearly one-half of the patents granted in this class.

Speaking of this class as a whole, there has been concentrated no unusual force of inventive powers upon it, except, perhaps, in the range of harvesters. Much activity and talent have been devoted to this class of machines, and it is fast increasing at the present time.

Harvesters.—27 patents.

1. The most important improvement presented in this class of machines during the year is in part disposing of the grain after it has been cut. A patent was granted to William Watson, and Watson and Renwick, in 1851, for a machine to bind cut grain automatically; but the owners preferred improving this machine to building it for sale, and the invention now to be noticed is the improvement on that of 1851. It

includes a complete harvester of grain, which performs its entire work automatically; the machine being constructed in the form of a rectangle, being twice as long from side to side as from front to rear. One side, or one half of the machine is occupied by the cutting, and the other by the binding mechanism.

As the machine is moved forward, broad-side foremost, the cutting part being on the end towards the standing grain, the standing grain in the swath to be cut is severed by the cutters, and falls back upon the endless apron platform, where it is carried along horizontally towards the binding part, and it is delivered to, or between, a pair of parallel inclined ascending endless aprons, which carry the grain up to the top of the binding apparatus and deliver it into the oblong crib, supplied with detent rakes and arms, which let down into the encircling and compressing arms just grain enough to make a bundle, and which compressing arms hold the grain firmly while the cord, previously thrown across the crib-space by the automatic movement, is carried down by the descending grain, and is then drawn by the machinery, and lastly tied into a knot, and the end cut off. The side of the crib opens, and the sheaf falls out upon the ground. The crib again closes instantly, and the succeeding sheaf is prepared and delivered in the same manner. The movements of the binding and tying apparatus are chiefly performed by cams or eccentrics working upon shafts.

2. *Grain Harvester*.—A patent was granted for the device of projecting rivet-heads on the under-side of the cutters, and a corresponding space in the cutter-bar beneath; the design being to clear the passage of the cutters and prevent clogging.

3. *Rake to a Grain Harvester*.—This is a very ingenious machine for raking and disposing in bundles, and depositing the same upon the ground. It consists mainly in a crane so constructed as to rotate a quarter of a circle, in which quadrant-movement it rakes across the platform and deposits its contents in the rear, by turning a quarter of a circle on its axis; the crane contains within itself a gimbal joint, the moving part of which consists of a rock shaft or a stirrup, the arms of which move in a vertical plane to the extent of a quarter of a circle. The rear one is connected with, and worked by, the crank of the driving wheel, while the arm extending towards the van, together with an elbow and arm extending from the top of the crane, controls the raking apparatus. All the raking part of the machine hangs upon the crane and turns with it. The operation of this machine presents a beautiful piece of workmanship. The crane which stands on one side of the platform turns itself around by the forward movement of the machine, bringing its arms over the platform, when, as it were, by a certain signal, one hand extends itself to the farthest side of the platform, and pulls to its fellow all the grain contained thereon, and, as soon as it has been drawn near the crane, the latter wheels around a quarter of a circle with the grain in its arms, and deposits its load in the rear, and returns for another charge.

4. *Potato Harvesters*.—Three patents for machines to dig potatoes have been granted. The first of these consists of an axle and a pair of wheels, drawn by a pair of horses, and around said axle, which moves with the wheels, a drum or cylinder is arranged, and armed with rows of radial teeth, while immediately behind and beneath, and in the same

curve with the periphery of the said radial teeth on said drum, is arranged a fixed rake, which has the ends of its curved teeth at the lowest part of the machine, while its rear part and head extend upward and backward in the curve of the said drum to the highest part of the machine.

Operation.—As the machine is drawn forward astride the row of potatoes to be dug, the rake teeth of the fixed rake run into, or under, the hills of potatoes, while the radial teeth on the drum sweep backward along the potatoes towards the curved teeth, and as the dirt falls out the potatoes are carried rearward and upward between the drum teeth and the curved rake head, and when at the top of the drum they roll off into the cart body.

5. *A second machine* of this character has also been patented, substituting for the radial teeth on the drum a series of stiff brushes, and for the upper portion of the curved rake head, in the rear of the drum, an endless belt of open work slats, or their equivalent, for the purpose of allowing the dirt to fall out, and to carry up the potatoes and deliver them into the cart body.

Ploughs.—Fifteen patents granted.

Cultivators.—Four patents.

Seed Planters.—Twenty six patents, constituting one of the largest divisions of the class of agricultural implements. It is a class of machines longer known than harvesters, and the range of invention much more confined. The devices are almost necessarily confined to the mode of distributing seed; and, in most cases, they are either by a reciprocating valve covering and uncovering the seed discharge aperture, or, secondly, a seed roller, having cup-shaped cavities on its periphery to receive the seed from the bottom of the hopper, and discharging the same as the roller rotates. These I shall call, for the sake of distinction—the former, seed planters of the first order; and the latter, seed planters of the second order.

Few of these present any feature of invention worthy of note; and, although many of them may constitute good machines, the novelty is generally very small, and the complicated structure requires a sketch in most cases to comprehend the devices.

6. *A Seed Planter* of the first order was patented, in which the novelty consisted in arming each extremity of the reciprocating valve-slide with a spring, to avoid any shock which might arise from striking against fixed stops.

7. *A Seed Planter* was patented, the device of which consisted of a valve of the first order, in which the novelty was confined to the construction of the valve, made up of two pieces put together face to face, so as to have the holes in each directly opposite. But one piece sliding horizontally and longitudinally upon the other, the holes, not coinciding, will be partially or entirely closed, so as to deliver less or more seed, or none at all.

I have mentioned these rather to show the character of the inventions in seed planters—how small they are—than for any other purpose. They are a fair representation of the twenty-four others that have not been particularly named.

Horse Rakes.—Three patents—One of these may be noticed.

8. *Horse Rake.*—This invention consists in making the axletree of a two-wheeled carriage the head of the rake, the teeth curving backward

and downward till they reach the ground, or near it. The same axle-tree is also hinged to the platform, and thills before it; and on its under and rear side a small hook or staple projects; and from this a strap, or belt, or link, extends forward to the whiffletree, by means of which the draught of the horses keeps the rake teeth close to the ground, except when released by the attendant who has control of it.

Threshers and Separators.—Eight patents.

9. *Threshing and Straw Separating Machines.*—Of the eight patents granted under this division, the following will be noticed for peculiarities of the devices rather than for the amount of invention involved. The first of these embraces three features of invention. First. The construction of the longitudinal bars or slats in the carrying part of the straw-separator. Second. The intervention of the fine screen between the threshing and winnowing parts of the machine, with the design of separating the fine matters before the grain is winnowed. Third. The construction of the *jumping rollers* and their supports. The last of these devices embraces the peculiarity designed to be noticed here. The jumping rollers, and the inclined planes on which they move with a reciprocating action, with the four rollers on their several short planes, one at each of the four corners of a shaking riddle or straw-carrier, constitute a new mode of sustaining and moving a shaking apparatus in grain-cleaning. A patent was granted for the device in general in 1851. The present patent is for a modification of the inclined planes.

10. *Hollow Cylindrical Straw Carrier.*—A patent has been granted for the use of an inclined hollow cylinder as a straw-carrier, constructed without an axle or radial arms, and supported on friction rollers bearing against its periphery. The whole surface of the cylinder is full of holes, to allow the grain to fall through the cylinder, from end to end, without obstruction.

11. *Upright Cylindrical Thresher and Winnower.*—That is, the thresher in its wire gauze concave, and the straw-carrying cylinder that removes the threshed straw, are all vertical. The grain is fed in at the periphery of the threshing cylinder, where the perforate hopper allows the already shelled wheat to fall down through the threshing part into the winnowing part below.

Hullers and Smut Machines.—Ten patents.—There are few inventions in this division that call for my special notice.

12. *Smut Machine* has been patented, consisting of a vertical cylindrical concave, containing a cylinder of spiral elevating beaters. The grain is fed in at or near the bottom, and carried upward by the said spiral beaters, arranged in spiral lines on the axle, and extending out radially, each one being a flattened or blade-formed arm; and the grain is discharged into, or through, an opening in the side of the upper part of the concave, where, passing through an inclined trough, it meets the fan blast, and is thoroughly cleaned of smut and dirt.

13. *Water Smut Machine.*—This invention is a washing, scrubbing, and drying machine for grain infected with smut. The form of the machine is that of a rectangle—an elevated frame work, in which are arranged longitudinally, and one over the other, three long troughs; the two upper ones having each a double bottom. The lower one, through which a stream of water passes, receives the grain to be cleaned, and

agitates it by the mutual friction of the kernels, as it is moved along from end to end. It is next taken, when it reaches the farthest end of the lower trough, by an endless belt of cups, having bottoms perforated to allow the escape of water, directly to the third or upper trough, where it is carried along from one end to the other over a bottom heated by a jacket of waste steam, supplied from the second or middle trough. When the grain arrives at the farthest end of the third or upper trough, it falls to the corresponding end of the middle trough; and, after being carried through that with a continuous agitation, it falls into the receptacle, washed, dried, and fit for grinding.

Winnowing Machines.—Three patents.

14. *A Grain Winnow and Weigher* was patented, and the noticeable device is the weighing apparatus. The invention is chiefly confined to the construction of the weighing apparatus on ways, and the balancing knife edge, so arranged that when the measure of grain is filled up to the required weight, the balance tips, and throws the grain weighed upon the inclined ways, and it immediately starts off on the railroad track to the depot, while its place is supplied by another, and so on.

Corn Shellers.—Four patents.

15. One of these shellers presents a somewhat novel feature. It is this: that the ears and cobs are allowed to accumulate in the machine sufficiently to act in the mass as an elastic bed against the spiral shelling projections. The other features of the sheller present nothing worthy of special remark.

Straw Cutters.—Three patents.

16. One of *these machines* is worthy of a passing notice, from the manner in which the cuts are given. It consists in the application of the tappet-wheel stroke to the cutting blade, which causes it to produce a chop cut, in combination with a shear cut, so that the machine will cut wet as well as dry straw.

Beehives.—Two patents —One of these hives presents what appears to be a very excellent invention, but it would be useless to attempt a description without a sketch.

Miscellaneous of Agriculture.—Nine patents.

17. *Ox Yoke.*—The device claimed is the use of a pair of rods, and a pair of chains working on pulleys, and imbedded within the yoke. Said chains and rods are connected with the sliding sectional pieces that hold the bows. The operation of the devices is, that when either one of the bows is moved from or towards the central part of the yoke, the other bow is moved equally, and so enables the animals to work at different, but always equal, distances from each other.

18. *Neck Yoke for Horses.*—This yoke is made in the ordinary form of neck yokes for spans of horses, but has the rods at the ends (into each of which is fitted a ring of the ordinary kind) controlled by spiral springs, one at each end, allowing the rods to slide out and in, to a certain extent, and in the same manner as the rod plays in the ordinary spring balance; so that any sudden movement of one horse would not jerk his mate, in consequence of the yielding action of the spring.

19. *Metallic Tube Scythe Snath*—designed for both lightness and strength. It also embraces the device of a longitudinal rib on the snath, fitting into a corresponding groove on the inner face of the nib-rings.

There are several of these grooves, so as to admit of setting the nib by rotation, backward or forward.

Respectfully submitted:

L. D. GALE, *Examiner.*

Hon. S. H. HODGES,
Commissioner of Patents.

U. S. PATENT OFFICE,
January 1, 1853.

SIR: I have the honor to submit the following report of the progress and the present condition of the business intrusted to my charge during the past year.

The classes of inventions referred to me for examination are the following:

Class 8.—Mathematical, philosophical, and optical instruments.

Class 12.—Lever and screw power, &c

Class 15.—Stone, clay, and glass manufactures.

Class 16.—Leather, &c.

Class 17.—Household furniture, &c.

Class 21.—Wearing apparel.

And of Class 1.—Churns and implements for working butter.

The whole number of applications which have been referred to me for examination during the year is 419.

Of this number there have been included in—

Class 8	-	-	-	-	-	-	-	-	-	-	-	81
Class 12	-	-	-	-	-	-	-	-	-	-	-	30
Class 15	-	-	-	-	-	-	-	-	-	-	-	45
Class 16	-	-	-	-	-	-	-	-	-	-	-	68
Class 17	-	-	-	-	-	-	-	-	-	-	-	137
Class 21	-	-	-	-	-	-	-	-	-	-	-	26
Class 1.—Churns, &c.	-	-	-	-	-	-	-	-	-	-	-	32

Of the above 419 cases, there have been—

Reissues	-	-	-	-	-	-	-	-	-	-	-	2
Additional improvement	-	-	-	-	-	-	-	-	-	-	-	4
Extension	-	-	-	-	-	-	-	-	-	-	-	1
Appeal	-	-	-	-	-	-	-	-	-	-	-	1

The number of cases remaining unexamined at my desk at the beginning of the year was 18; at the close of the year, 70. The whole number which has fallen to my lot for examination within the year is, therefore, 437.

It will be perceived that I have received a smaller number of cases than my colleagues; but, on the other hand, they are distributed through seven of the twenty-three classes in the Office, and the subjects included in several of these classes are, besides, very heterogeneous in their nature. This, of necessity, greatly increases the labor of examination.

I subjoin notices of some of the inventions which have been patented within the year.

MATHEMATICAL, PHILOSOPHICAL, AND OPTICAL INSTRUMENTS.

Electricity and Electro Magnetism.—The application of these agents to useful purposes in the arts has become so extensive, that applications for patents for improvements in this branch have already become quite numerous, and appear to be increasing. Among the patents which have been granted within the year is one for an

Electric Whaling Apparatus.—A patent has been granted for the application of powerful electric discharges in the capture of whales or other large sea animals, the object of which is to paralyze the animal, so as to deprive him of the power of motion, and speedily destroy life. The whaling boat is supplied with a very powerful magneto-electric machine, constructed with large permanent magnets, and rapidly revolving armatures, surrounded with coils, the construction being in principle like that of the revolving armature machines used for medical purposes. One pole of this machine is connected by a thick wire with the copper sheathing on the bottom of the boat, thus establishing a large surface connexion of that pole with the water of the sea. The other pole of the machine is connected with the harpoon by means of a gilded copper wire, covered with an insulating India-rubber coating. After the machine has been put in motion, the harpoon is thrown, and the instant it strikes the animal, the discharges of the machine take place in rapid succession from the harpoon head, through his body, returning, through the sea and the copper sheathing of the boat, to the other pole of the machine. Serious doubts were entertained, on the examination of this case, of the practicability of increasing the power of these electric shocks to a sufficient degree to overpower animals so large as the whale; yet we are informed that the experiments already made upon whales have been successful.

Telegraphs.—There has been comparatively a dearth of inventions under this head brought before the Office during the year, and there has been but a single improvement in the electric telegraph proper passed for issue by me, the patent for which goes out on the 4th of the present month. A patent has been granted for a very simple and beautiful modification of the House printing telegraph, which will be noticed by my colleague, Mr. Baldwin, the case having been examined by him as an old case, left by his predecessor in office. The telegraphic register to which I have alluded consists of the common Morse register, to which is applied an extra electro-magnet, with an armature, operating a lever and pawl, which acts upon a ratchet-wheel, that continually winds up the main spring for driving the clock-work of the register. The extra electro-magnet is operated upon by the same current that actuates the electro-magnet of the pen-lever. A like arrangement has been before used, for continually winding up a clock by an electro-magnet, the circuit of which was broken and closed at every swing of the pendulum. In this case, a provision is made for arresting the action of the winding electro-magnet and lever, by means of a cross connexion, which is formed as soon as the spring is wound up to a certain point. The electric current then takes the cross connexion, instead of going around through the coil of the winding magnet, and over-winding is thereby prevented. As allied to the subject of electric telegraphs may also be noticed the two following:

Striking Bells by Electro-Magnetism.—The subject of a patent granted under this head is an improvement by which the alarm circuit

used in the system of electro-magnetic fire-alarms now being introduced into some of our large cities, is enabled, without the use of local batteries, to call into operation a force sufficient to unlock and set in action the heavy mechanism for striking the alarm bells. The main detent which locks the striking machinery is lifted by the action of a falling weight at the end of a lever. This is held up in a nearly vertical, but slightly inclined position, by a secondary detent connected with the movable armature of an electro-magnet, placed in the alarm circuit. When a galvanic current is passed, the electro-magnet attracts the armature with sufficient force to move the secondary detent, which lets the before-mentioned weighted lever drop, and this in its turn lifts the main detent. The machinery thus unlocked is set in motion, and a revolving cam lifts the weighted lever again to its nearly upright position, where it is caught and held as before by the secondary detent, if the latter has, in the mean time, been released from the attraction of the electro-magnet by the cessation of the current. As soon as the machinery has moved far enough to give one stroke of the bell, its motion is again arrested by the main detent. But so long as the alarm circuit is kept closed, so as to keep up the current, and leave the secondary detent subject to the continued action of the electro-magnet, the weighted lever will continue to fall back at every revolution of the cam, and thus keep the machinery unlocked and in action.

A full description and engraving of this machine, and of the whole system of the municipal electric telegraph, as established in Boston, may be seen in the thirteenth volume of the second series of the *American Journal of Science and Arts*.

Electro-Magnetic Fire Alarms.—A patent has been granted for an electro magnetic apparatus for giving notice of fire or burglars. It consists of two galvanic circuits, which may be both operated by one battery, with electro-magnets and mechanism so arranged that the breaking of one of these circuits may cause the revolution of a signal wheel, operated by clock-work, which closes and breaks the other circuit so as to communicate signals to any desired point. The wire forming the former of these two circuits is led around through all the exposed parts of the building, and is so arranged that its continuity will be broken by any attempt at breaking open doors or windows, and in parts exposed to fire it is divided and bound together by a combustible cord, the burning of which will cause it to part and give an alarm by the interruption of the current in the same way.

Improvements in the Points of Lightning Rods.—Two patents have been granted for improvements both having for their object such a construction of the point as shall cause it to be left tolerably well pointed even after it has been partially melted by an electric discharge. The principle in both is the use of metals or metallic alloys of different degrees of fusibility; the most fusible forming the upper end or outer surface of the point. In one of these points the device consists in completely covering or coating the inner or main point with a pointed metallic sheath of a more fusible metal or alloy; and this again with another still more fusible; and this, if desired, with still another. In case of a stroke of lightning sufficiently powerful to melt the point, as not unfrequently happens, from its small mass and the great heat produced where the fluid passes from the air to the conductor, the external sheath is to

act as a protector to the point of more infusible alloy within, by absorbing the heat as it melts off, leaving the latter sufficiently perfect still to act as a point.

The other plan is a modification in which the unequally fusible metals or alloys, instead of being formed as a succession of sheaths, are made solid, and connected one above another by oblique joints or faces, the inclination being towards the square or angular corner of the rod, so that when one section is removed the one next below will be left with a sharp point on that corner. We are not informed about the success of these contrivances in practice. Trial only can test their usefulness; and it would seem that the only practicable way of instituting the experiment will be to point them to the clouds and wait patiently for the bolt to come.

Improvements in Galvanic Batteries.—Only one improvement of this kind has been patented within the year, and this is for a modification of the old voltaic pile, designed more particularly for medical purposes. The metallic plates of the battery are perforated, and are separated by short metallic studs, which, while they leave a small space between the plates, form a metallic contact. The arrangement is suspended in a kind of light frame or bail, so that it can be at once immersed in any suitable exciting solution until the cards which form the porous element are saturated with the liquid, when the battery is withdrawn and is ready for use.

Instruments for purposes of Geometrical Measurement.—The only instrument of this class which has been patented is what the inventor terms a centre-square for finding the centre of a circle, designed for the use of mechanics. The general principle upon which the instrument is based is well known to geometricians, viz: that if two tangents (or straight lines touching the circumference of a circle) be extended until they intersect each other, a straight line bisecting the angle between them will pass through the centre of the circle. The instrument consists of two arms, placed together at right angles to each other, in the manner of a carpenter's square, but of equal thickness, and having their surfaces "flush;" upon the upper surface of which arms a straight ruler is fixed at its end in such manner as to have one of its edges at the inner angular point of the arms, and that edge extending midway between them, or bisecting the angle between them. This ruler can be braced firmly by a bar running across between the extreme ends of the arms. If the mechanic wishes to find the centre of a circular wheel he places the instrument upon it, with the two arms both resting against its circumference, in which position the edge of the ruler will run across its centre. A straight line is marked in this position, and the instrument is applied again to another part of the circumference, so as to mark in the same manner another line intersecting the first. The point of intersection is of course the centre of the wheel. The whole is the work of a moment.

Improvements in Time-Pieces.—Notwithstanding the great amount of attention that has been bestowed upon this elegant class of machines for many ages past, and the high degree of perfection to which they have been brought, invention is still busy upon them, and every year brings before the Office a greater or less number of inventions of this class. During the year several patents having been granted. One of these is for a new spring-balance for time-keepers. The ordinary chronometer or

watch-balance, it is well known, plays on points at the ends of its axis, and its motions or vibrations are governed by the tension of a coiled spring, which in watches is called the hair spring. This balance, which has been called the most beautiful invention in mechanics, has, of late years, to a considerable extent, taken the place of a pendulum in larger time-pieces; and in such cases the points of the axis of the balance have been made to rest upon friction wheels to reduce their friction. In the present instance, however, the points and the spiral-spring are thrown aside, and a long, straight, thin, and narrow steel spring is made to perform the office of both. The spring is secured to the clock-frame at both ends and strained tight, and the balance itself, consisting, in this instance, simply of a straight bar, loaded with a ball at each end, is suspended at or near the middle of the spring; the spring passing through the middle of the bar at right angles. The spring is thus made to serve the double purpose of a frictionless suspension for the balance and a governor of its motions.

The force of torsion, as it is called—that is, the force with which a twisted wire or thread of glass tends to untwist itself—has been used before in certain instruments for philosophical purposes, as in some magnetic instruments where the magnetic bar is suspended at the lower end of the wire; and, when used for such purposes in this manner, the force of torsion of the wire has been measured by removing the magnet, putting a given weight in its place, and counting the number of vibrations it accomplishes in a given time; and such an arrangement as this has even been applied to a time piece. But in the present arrangement, where the flat spring is secured at both ends, and strained tight, so that the time piece can be moved about like a watch, the governing force of the balance is not derived from the simple torsion of the spring, but is also due in part to, and can be varied by, the force with which the spring is strained. The exact adjustments for time are made either by an adjustable slot, through which the spring passes near its end, or by a screw adjustment of the balls, or both.

Alarm Time-Pieces for Lighting Lamps.—A hollow cylinder of sufficient size to contain a small lamp and the fixtures for lighting it is placed in a vertical position in a space cut for it in the lower part of the front of the case of the time-piece. It is mounted so as to turn freely on its own axis upon pins fixed in the case at the top and bottom of the cylinder. Part of the side and top of this cylinder, to the extent of almost one half the circumference, are cut away, leaving that side entirely open. The lamp supplied with spirit is slipped into a groove prepared for its reception in the bottom of the cylinder, the wick being eccentric to the cylinder, so that it may have a sweeping motion when the latter turns. An extinguisher is placed upon the wick to prevent evaporation of the spirit, and a match secured in an elastic support on the lamp top, which holds it in position for lighting the lamp when ignited. The rubber for igniting the match is fixed, being attached in a horizontal position, within the cylinder, to the fixed pin about which the cylinder turns at its upper end. When prepared for letting off, the cylinder is set with its open side turned to the interior of the case, and is held there by a hooked pawl. In this position the lamp and all the fixtures are concealed from view by the closed side of the cylinder, which projects in front and seems to form part of the case itself. When the machinery of the alarm is set in operation, it disengages the hooked pawl from the cylinder, and the latter is

thrown round through half a revolution by a spring. This brings the open side of the cylinder to the front, and presents the lamp to the open air; the movement at the same time causing both the match and the extinguisher to strike the fixed rubber, igniting the one, and throwing the other from the wick.

Registers or Counting Machines.—Patents have been granted for some machines of this class. One of these is an omnibus register, the object of which is to register the fare according to the weight of the passenger. Many registers have been contrived for registering the fares in omnibuses, and for other similar purposes, particularly in France, by means of a slight movement given to the step of the omnibus by the weight of the passenger as he mounts to enter the vehicle; the movement of the step being communicated to mechanism, showing, by an index, a register of the number of passengers. In the present case the step is made to rest upon springs so stiff as to yield but a little to the weight of a man, and its motion, which will vary with the weight of the person, is communicated to a ratchet wheel by means of a pawl; the length of the teeth of the ratchet wheel, the strength of the springs, and the arrangement of the pawls being so accommodated, that a person between certain limits of weight will cause the ratchet wheel to advance one tooth and register a single fare, while a heavier person will cause it to advance two teeth and register a double fare.

Pressure Gauges.—Steam gauges, if specially designed for that purpose, are examined in the class of steam engines; but gauges of pneumatic pressure for general purposes are referred to me under the class of mathematical and philosophical instruments. An instrument of this kind has been patented, which consists simply of a metallic tube, much flattened, and then bent into a curve, which may amount to nearly a whole circle or more, one of the flattened sides forming the concave, the other the convex side of the curve. The interior of this tube is made to communicate with the confined fluid whose pressure is to be measured. This pressure tends to force the flattened sides of the tube apart to a greater distance from each other; and, upon a principle of action not easily explained in words, this produces a partial straightening of the bent tube or diminution of its curvature, so that, one extremity of the tube being fixed to the frame-work of the instrument, the other receives a sensible motion, which, being multiplied and communicated to an index, furnishes a measure of the pressure. If the interior of the tube be made a vacuum the instrument will become a barometer, if suitably graduated and compensated for changes of temperature.

LEVER, SCREW, AND OTHER MECHANICAL POWER, AS APPLIED TO PRESSING, WEIGHING, AND RAISING AND MOVING WEIGHTS.

Machines of this class are so ancient and so universally used, that we might well expect to find the field of invention in this direction almost entirely preoccupied. Accordingly very few inventions of this class come before the Office possessing any interest or novelty. Yet there are enough to show that invention is actively at work wherever it can find occasion for its exercise. Several patents have been granted within the year for improvements in machines for

Weighing.—One of these is a platform scale of that description which acts by means of a system of levers operating upon a vertical connecting

rod which communicates motion by rack and pinion, or otherwise, to a pendulum. The deflection of the pendulum from the perpendicular position in which it naturally hangs, will afford a measure of the weight placed on the platform, the weight being marked upon a dial furnished with an index, attached to or geared with the axis of the pendulum. The present machine is contrived for rapid weighing and for *self-registering* of the weights. For both these objects, and especially the last, it was necessary to provide against the liability of the pendulum to swinging, when the weight is placed on the platform, beyond the point at which it would settle, and thus registering more than the true weight. One means employed or proposed by the patentee for effecting this is the use of an extra platform on each side of the weighing platform, the extra platform resting by knife edges with one side upon the side of the weighing platform, and the other side upon the ground. When a carriage is drawn upon the platform it will be seen that as it mounts upon the extra platform and advances over it from that side which rests upon the ground to that which rests upon the middle or weighing platform, its weight is transferred in a gradual manner to the latter until it rests entirely upon it. By this means the pendulum, instead of rising with a sudden swing, carrying it beyond the point of equilibrium, as it would do if the weight came upon the platform in a single jolt, rises gradually with the gradually increasing force and stops at the point of equilibrium, leaving a correct register of the weight by means of registering apparatus suitably connected with it.

The pendulum is not relied on always to measure the whole weight of the article or vehicle weighed, but only its excess over a certain constant weight, sufficient to balance a poise, which is placed upon a weighing beam, or steel yard, that forms part of the train of levers. A second register, which counts the number of weighings, will then account for this constant weight, and the first-mentioned register for the excesses of weight indicated by the pendulum.

Presses.—Among the machines which have been patented under this head may be mentioned one for pressing, flattening, and shaping plug tobacco, and another for forming cigars. These machines, particularly the last, have but a distant alliance to presses as a class, but, under the past practice of the Office, machines for performing most of the mechanical operations upon tobacco have been examined in the same class with those for pressing it. The first-mentioned machine was contrived with the view of obviating the difficulty which, the patentee states, arises in pressing tobacco by machinery from the pistons and moulds in which the plug is pressed becoming clogged with the gummy matter of the tobacco, and also from the plug expanding again when released from the mould. It consists of a revolving mould-wheel, a mould-bottom, and pistons; two pistons being applied to push the plug from its rectangular hopper into the mould, a second to press the plug, and a third to push the plug from the mould, through the disk, in between two endless aprons, each of which slides over a fixed surface, which serves to preserve the compression of the plug for a certain length of time, until, being pushed on by succeeding plugs, it is discharged from between the endless aprons. The mould-wheel turns, so as to present the plug in succession to each of the pistons. To this arrangement are applied certain contrivances for keeping the mould-bottom and the pressing piston clean: the former

being made a revolving disk, cleaned by a fixed scraper and oiled by an elastic roller; and the latter being made as four separate pistons, revolving on an axis, which is mounted on a reciprocating slide, or cross-head; so that, by a quarter revolution of the axis at every eighth pressing, a new piston may be brought into play, after having been cleaned and oiled during the preceding three quarter revolutions.

The machine for forming cigars consists of mechanism so contrived as to take the tobacco in the leaf, cut it up in two directions, by the successive actions of two cutters, or cutting pistons, and roll it between four rollers, which stop their motion and open to receive each portion as it is delivered from the second cutting piston, and which close and renew their motion each time as that piston retreats, and which, when a sufficient quantity of tobacco has been introduced to form the cigar, roll on the paper wrapper, one corner of the paper wrapper being introduced by the attendant between one of the rollers and the cigar. This last-mentioned roller is made a little smaller than the others, and is also smooth, while they are fluted. The fluted rollers draw the paper in with their own velocity, and thus cause it to draw under the smaller and slower moving smooth roller, so as to wind it tight.

STONE AND CLAY MANUFACTURES, INCLUDING MACHINES FOR POTTERY, GLASS-MAKING, BRICK-MAKING, DRESSING AND PREPARING STONE, CEMENTS, AND OTHER BUILDING MATERIALS.

Machines for dressing Stone.—Owing to the refractory nature of the material, and the rapidity with which it wears away the edge of all cutting tools of steel, however well tempered, it has been found a very difficult matter to cut stone by machinery with any advantage. The subject has, however, received much attention for some years past, and frequent applications have been, and still are, made for patents for machines for this purpose, designed to supersede, in a great measure, manual labor in the operation. In one of these machines, for which a patent has been granted, the cutting chisel, instead of being made to act upon the stone by a blow, is operated by a very short crank, or eccentric, and connecting rod. In the positive reciprocating motion thus given to the chisel, it is brought to bear upon the stone just at the end of its stroke, and, by the intense pressure it is capable of exerting at that point, chips it away as fast as the stone, mounted upon a sliding carriage, is carried beneath it, by a gradual feed motion. A series of such cutters is extended across the face of the stone so as to cut the whole width at once; the eccentrics for operating the several cutters being upon a single shaft, and so arranged as to act alternately or in succession.

Machines for drilling Stone.—Several of these machines have been patented within the year. In one of them the drill stock, upon the momentum of which the blow depends, works between the grooved circumferences of two pairs of wheels, which, revolving in opposite directions, carry the drill stock first one way, to give the blow, and then back again. The drill-stock lies between the two wheels of each pair, in the manner of a bar of iron between the rollers of a rolling-mill, but only one pair grasps or binds it at a time; a part of the circumference of the wheels of each pair being slightly reduced in such manner that, while one pair is binding the drill-stock, and giving it motion, the other pair

leaves it free play, only acting as a guide. The draw, as it may be termed, or binding part of the first pair, which gives the advance motion to the drill, is a trifle shorter than that of the other, or second pair, in order to secure the release of the drill-stock just before the drill is ready to strike the stone. With this precaution, it will be seen that the two pairs of wheels alone will command both the blow of the drill and its progressive advance as the material is cut away. But they are also made at the same time to do the turning of the drill. This is done simply by placing the two wheels of the second pair a very little oblique to the direction of the drill stock, by which means they impart to it a slight screw motion. To prevent the inconvenience of a rapid return-motion of the drill, the wheels of the second pair are of smaller diameter than those of the first.

In another of these machines the drill stock works through the hollow piston-rod of a small steam engine, the piston rod being made to extend through packing boxes in both ends of the steam-cylinder, and the fly-wheel, crank, and connecting rod of the engine being located on one side, so as not to interfere with the range of the drill stock. The cross-head of the piston-rod is furnished with a peculiar clamping apparatus, by which the drill stock is clamped to it until just after the middle of the stroke of the piston, where the velocity is at its maximum, when, by the action of a fixed cam, it is unclamped, and continues to move on freely, with its full velocity, until it strikes the stone, before the piston rod itself, which is controlled by the crank motion, has reached the end of its stroke. But when the latter reaches the end of its stroke the clamping is renewed by the letting off of a spring, and the drill stock is drawn back by the return of the piston, and advanced again, till it comes to the point where it is unclamped as before. This clamping apparatus is so arranged as, at the same time, to rotate the drill-stock by its action. It will be seen that in this, as in the last-described machine, the progressive advance of the drill up to its work takes care of itself.

Sawing Stone.—Under this head I notice a saw for sawing stone, which consists of two steel plates riveted together, with a plate of lead between them. The idea of the inventor is that the sand shall lodge in the space between the steel plates and imbed itself in the lead, the latter always wearing away, so as to leave the former projecting beyond or below it.

Brick Machines.—On account of the great labor of moulding and pressing bricks by hand, and the great difficulty of doing it well by machinery, a very large amount of ingenuity and skill has been expended upon the invention and improvement of brick machines both here and in Great Britain and France. Every year brings into this Office many applications for patents for these machines, and a number have been patented during the year now past. They do not, however, generally, in their leading features, present anything to distinguish them from some of the numerous machines before patented or in use. The improvements have been chiefly in the subordinate features, and it would be difficult to give a clear idea of them without the aid of drawings.

Brick Kilns.—A patent has been granted for an arrangement of kilns, or ovens, for burning brick, in which eight kilns (more or less) are placed together, in a rectangular form, four by two, and are so connected with each other, and with the external air, and with the chimneys, as to form

in effect a circle. The several passages and flues are provided with dampers, by means of which a draught from the external air may be admitted into any one of the eight kilns, and from that through one or more adjacent kilns to any other, and from that to the chimney. By this means the putting up the sun-dried brick into the kiln to be burnt, the burning of the brick, and the removal of burnt brick, may all be going on simultaneously and perpetually; and also the heating up of the brick at the commencement of the burning, and the first part of the burning, may be accomplished by waste heat, derived from the kiln in which the burning is being completed. For instance: while the cold brick is being removed from No. 2, the already burnt but hot brick may be cooling down in No. 3, the completion of the burning going on in No. 4, the partial burning going on in No. 5 by the waste heat of No. 4, the first heating up of the unburnt brick going on in No. 6 by the waste heat of No. 5, and the laying up of a fresh supply of unburnt brick advancing in No. 7. The draught in this case will of course be directed into No. 4, thence in succession to Nos. 5 and 6, and thence to the chimney; and it may be either admitted to the fires of No. 4 directly from the air, or be made first to traverse the hot bricks of No. 3, so as to save their heat, and aid in cooling them down. When the burning of No. 4 is complete, its fires are extinguished, and fires are lighted in No. 5; No. 7 is included in the line of draught; No. 3, now cold, excluded, and the work continues as before.

Glass Manufacture.

Glass Lenses for Signal Lights.—The large glass lenses used in light-houses, for the purpose of throwing the rays of light in parallel lines, and rendering them visible at a great distance, are made upon the well known plan of Fresnel, of concentric rings, first ground and polished, and then connected together. A patent has been granted for producing a lens of the same description in a single piece by pressing in metallic moulds and subsequent fire polishing; the patentee having discovered, as he says, and as appears to be shown by the performance of a large lens deposited in the Office, that by this means he can produce, at a very cheap rate, a lens of sufficiently good polish, and sufficiently perfect optical form, for the purpose intended. It will readily be seen by the optician, that if the perfection of form can be carried to a certain point, great pains and expense laid out to carry it to a very high degree of precision would be nearly thrown away on account of the diameter of the source of light.

Frosting Glass.—In 1851 a patent was granted for frosting the surface of glass plates, by placing the plate flat in the bottom of a box made to rock like a cradle, and then covering it with sand and pebbles and water. The rocking motion caused the sand and pebbles to slide over the glass by their gravity from one side to the other, and thus produce the fine abrasion of the surface that imparts the frosted appearance. During the year past a patent has been granted for a modification of this arrangement, which consists in giving to the box in which the plate of glass is laid a very quick and short vibratory motion on horizontal ways, so that the glass is made to move beneath the sand, the inertia of the latter preventing it from moving with the glass.

LEATHER, INCLUDING TANNING AND DRESSING, MANUFACTURE OF BOOTS, SHOES, SADDLERY, HARNESS, &C.

Tanning.—Invention is pretty active in this important department of the arts, and many applications for patents are made every year, and during the past year two patents have been granted. The particular object that seems to receive most attention from inventors, is the plumping or raising of the hide by means of certain chemical substances or compounds, which promote or accelerate the union of the tannin with the hide. The applications under this head are, as a class, the most perplexing to your examiner of any that come before him for examination. This effect of raising the hide appears to be a very general property of the acids and salts, and it becomes therefore sometimes a very nice question to determine how far the substitution of one for another, or the compounding of one with another, may be patentable or unpatentable. It evidently will not do to regard them, generally, as equivalents; for each particular acid, or salt, aside from the general property in question, has its own specific action, more or less injurious or beneficial, upon the texture of the skin; and these acids and salts also possess the general property in unequal degrees. There is, therefore, full scope for invention in selecting, under the guidance of carefully conducted and accurate comparative experiments, such acids or salts as will produce the required result in the quickest and most perfect manner, with the least injury to the quality of the leather; and he who makes a real improvement in this way, is unquestionably entitled to a patent for it. But, on the other hand, it must be evident that these acids and salts might be combined in new forms and proportions, *ad libitum*, without any real invention or improvement being made.

The complete separation of this class of cases from the really meritorious is quite beyond the power of the Office with its present limited means of experimental investigation; and, under these circumstances, your examiner has recommended the grant of patents for new compositions when there appeared evidence of a good result, and no positive grounds of belief that the case was no more than one of obvious substitution of mere equivalents.

Sulphate of Potash.—A patent has been granted for the use of sulphate of potash in strong tanning solutions of terra japonica, or other sources of tannin. Besides the tests to which this salt has been put in practical tanning, the inventor states that it has responded very favorably to a new test which he has proposed as generally applicable to all solutions, and which, if well founded, appears, from its simplicity, and the readiness with which it gives its indications, to promise an important addition to the means of investigation. Not being authorized by the inventor, I am not at liberty to describe this test. The sulphate is commonly used with a proportion of alum in the solution.

Borax.—A patent has been granted for the use of borax, in combination with nitre and alum, in solutions of tannin, more particularly strong solutions of terra japonica.

Polishing Leather.—A machine for this purpose has been patented, in which the polishing tools are attached to an endless band passing over two wheels upon the same level. The tool is drawn over the leather while traversing the lower half of the endless band; the pressure of the tool upon the leather being maintained by horizontal ways, beneath

which pass projections from the tool. The leather rests upon an adjustable spring bed.

BOOTS AND SHOES.

Implements for Lasting Boots.—Two of these have been patented. The first consists of the following elements: first, a standard, or post, resting vertically upon the sole of the shoe; second, a screw, swivelled in the top of the post, and rising vertically therefrom, and terminating at the top in a handle, or thumb piece, by which it is turned; third, a cross-head, with a female screw cut through it, by which it plays up and down upon the before-mentioned male screw; fourth, hooked claws, which are hinged at their upper ends to the cross head, and at their lower ends lay hold of the edges of the upper leather of the shoe; fifth, an inclined slot at about the middle of the length of each claw; the slots of both claws playing upon a round pin, which is inserted into the side of the above-mentioned post. The action of the slots and pin, in combination with that of the screw, is such as to draw the upper-leather upward and inward at the same time.

The second implement consists in part of a pair of pincers, with very long jaws, terminating at their extremities in claws, which lay hold of the ends of the upper-leather; the pincers being held with their handles upward and opened. To the insides of the jaws are hinged, at suitable points between the claws and the centre pin of the pincers, two bars, which converge as they descend, till they meet at their lower ends, and are there hinged to a step that rests upon the sole of the shoe. As the claws are brought towards each other by closing the pincers, they are, at the same time, thrown upward by the action of the hinged bars.

HOUSEHOLD FURNITURE, MACHINES AND IMPLEMENTS FOR DOMESTIC PURPOSES, INCLUDING WASHING MACHINES, BREAD AND CRACKER MACHINES, FEATHER DRESSING, ETC.

Chairs—Improvement for preventing wear of Carpets.—We have had chairs made with the hind legs retreating so as to interdict the occupant from the luxury of leaning back in his chair; but the patentee, with a more accommodating spirit, has provided the legs with ball and socket joints and flat steps at their lower ends.

Railway Car Seats.—In one of these the back reverses by means of reversing arms, hinged to the middle of the elbows of the seat in the common way; but it has a secondary back, of equal width, connected to it, by means of hinged bars, in such manner that the secondary back, when in that position in which the two backs lie flat upon each other, back to back, can hinge upon either side of the main back, and so be turned up and made to rest upon the upper side of the latter, whichever side is uppermost. The connexion between the main and secondary back is made by one pair of bars hinged to one side of the main back and to the opposite side of the secondary one, and another pair hinged in like manner to the remaining sides of the two backs. The general principle of this mode of connexion is not new, being found in certain toys; but, so far as has come to the knowledge of your examiner, there has been no application of it which it was thought could be considered an equivalent. In another car seat, the back is made to change from one

side to the other upon reversing arms, as usual; but, instead of being firmly attached to those arms, it is made to hinge upon their extremities, and to rest, by means of suitable pins or knobs at its corners, in notches made in the frame of the seat; and the elevation and the inclination of the back can be varied by changing it from one notch to another.

A third car seat has two planks, suitably padded, hinged to each other and to a common support at their edges, but connected with each other by means of suitable bracing, to be presently described, in such manner as to maintain a certain angle with each other; then, by tipping them over one way or the other upon the hinged support, either may be brought into a horizontal position, the other serving as a back; the sitter, of course, facing opposite ways in the two cases. The manner in which the inclination of the back and seat to each other is made adjustable is this: From the hinge joint at each end of the seat issues a straight cylindrical rod, bisecting the angle between the seat and back. Upon this rod is a slider, which can move along the rod and be fastened at any point by a clamp screw. To this slider are hinged two bars, the other ends of which are hinged to the back and seat, forming with them—*i. e.*, with their cross section—a four-sided equilateral parallelogram or lozenge, of which the rod above mentioned is a diagonal. Increasing or diminishing the length of this diagonal by means of the slider, causes an alteration in the magnitude of the angle of inclination of the back to the seat, and the arms above mentioned serve at the same time as elbows to the chair.

In a fourth seat the back is made in two parts, which can swing horizontally round the ends of the seat, and be joined together on either side of it; or they may be turned on opposite sides to each other, so as to form what is called a *tête-à-tête*.

Washing Machines.—Applications for patents under this head are numerous, considering the large amount of ingenuity that has already been expended. One of the machines which have been patented during the year consists of a vertical plunger, in combination with a mass of floating balls, through which the plunger is forced with the clothes attached to it.

Machine for Scouring Knives and Forks.—Two cylindrical brushes, touching and slightly entering or “mashing” into each other, revolve together in the same direction (as to the adjacent sides, viz: downward) with equal velocity. The knife is introduced between them, and the small extent of the surface of contact in this arrangement is favorable to a perfect action of the bristles upon every part of the surface of the article, while the brushes can be constantly replenished with the scouring material by taking it up from a trough beneath them.

Cheese Cutter.—From the centre of a circular base board rises a metallic spindle, having a groove in one side, and pointed at the top. Upon the base board is placed a second circular board, which turns about the spindle as a centre. Upon this the cheese is placed, being penetrated through its centre by the spindle. The knife is applied, with its point in the groove of the spindle, and is forced down into the cheese, guided by the groove, till it comes to a little mortice cut through the spindle, into which the point then takes, and which then may serve as a fulcrum to complete the cut. By rotating the cheese, a second cut can be made at any desired angle with the first.

WEARING APPAREL, ARTICLES FOR THE TOILET, INCLUDING INSTRUMENTS
FOR MANUFACTURE.

Umbrella.—A patent has been granted for an umbrella, in which the aim has been to dispense with the braces commonly used to distend the ribs, by the use of what may be considered a sort of substitute for ribs and braces both. This consists of ribs, as I will term them, connected by hinge joints, or, as in the model and drawings deposited in the Office, by springs, to the staff, a short distance below its upper end. The covering is attached only to the extreme ends of the ribs, and to a part at its centre, which, by a screw, can be moved to a greater or less distance above the point where the ribs are connected to the staff. On commencing thus to screw the centre of the cover upward, the cover begins to act upon the extremities of the ribs, which causes them to spread outward, and continuing the motion they will spread to the full span of the cover. This construction, of course, gives the cover a pointed top.

Machine for forming Metallic Button Backs.—This machine, by means of a system of cams and levers, takes the metallic blank, or circular disk of which the button back is to be formed, from the bottom of a pile of such disks in a vertical tube, in the manner of a coining machine, punches a slit through its centre for the reception of the eye, bends it up into the convex form required, takes the wire from a reel, cuts off a piece of suitable length, bends it into an eye, inserts the ends of this through the slit, clinches them down, and, by pressure suitably applied, fastens the eye firmly in its place.

Respectfully submitted:

J. H. LANE, *Examiner.*

Hon. S. H. HODGES,
Commissioner of Patents.

UNITED STATES PATENT OFFICE,
January 1, 1853.

SIR: In compliance with your request, I have the honor to submit the following report of the condition of the business of my desk for the past year, together with a brief notice of a few of the inventions embraced in the classes under my charge.

The duties of an examiner have become almost professional, and his labors are necessarily arduous. Whatever the qualifications of a new incumbent, he cannot avoid embarrassment from the want of experience; and, for my own part, I yet feel scarcely less diffidence in my ability to discharge with credit to the Office the duties of my desk than I did at the moment I was appointed the successor of Dr. Charles G. Page.

The sterling integrity, varied accomplishments, and long experience of Dr. Page, gave a peculiar value to his services as an examiner of patents, and my daily labors in the Office have served to convince me of the accuracy of his research, and the propriety of his decisions.

Owing to the increase of the examining corps in May, 1851, and the new division of classes that ensued, several applications, out of my classes, were examined by me.

Four classes are apportioned to me for examination, namely.

Class V. *Calorifics* embracing *Light, Heat, and Ventilation*, and comprising lamps and gas-burners, fireplaces, stoves, cooking and drying apparatus, and preparation of fuel; ventilation of houses, ships, and land-carriages.

Class XVIII. *Arts, Polite, Fine, and Ornamental*, including music, painting, sculpture, engraving, books, printing and binding, and jewelry.

Class XX. *Medicine, Surgery, and Dentistry*.

Class XXIII. *Designs*.

The whole number of examinations during the year was 796, of which 223 were patented, including 106 designs; and 249 were rejected, including 20 designs.

The new applications referred to me during the year were 402, including 126 designs, of which 54 cases remain unexamined at this date.

Under Class V the applications have been numerous, without exhibiting any marked progress in invention.

There is yet much to be accomplished in perfecting artificial light; and it is to be regretted that inventors should be so generally satisfied with attempts on their part to render the use of dangerous materials popular, rather than occupy themselves with the search after something that could be used to supply this want, without endangering the safety of all who participate in its consumption.

The desire to render the use of highly combustible fluids less dangerous than they can be when burned in lamps of the ordinary construction, has given rise to a few improvements, for which patents have been granted. Thus far, however, nothing has been presented which can render these compounds entirely safe; while the frequent and dreadful accidents almost daily recorded from their general use should prompt the public to the utmost care, if not to banish them from all dwellings, as movable lights, and especially when burned in lamps of fragile materials.

In one of the patents granted for a camphene lamp, the prominent feature of the improvement consists in surrounding the wick tube with a separate chamber, to be filled with water; so that, if the lamp should fall, the water in the chamber will be thrown out, and extinguish the lamp. This may afford additional security against one class of accidents.

In another, the invention consists in providing a separate chamber, to receive any fluid, that else might overflow from the expansion by heat of the volume of liquid in the fountain, and thus produce explosion.

An improvement in a railroad lamp was patented, for the protection afforded to a common glass reflector against the injurious effects of heat from the lamp. A body of water is kept in contact with the back of the reflector, which is thus prevented from becoming heated to a degree that will injure its brilliancy.

A patent was granted for a gas-burner, in which the improvement professes to provide against the variation of the flame from unequal pressure, or, in other words, that will give a steady, uniform jet of gas, although the pressure at the trunk may be irregular, and fluctuate from any cause.

Few patents have been granted for stoves, although the applications have been numerous. Patents have been granted for various improvements in cooking-stoves, cooking-ranges, grates, and chimney-caps.

Several patents have also been granted for improvements in hot-air furnaces for warming buildings, in which the chief aim has been to

augment the radiating surface, without materially increasing the size of the furnace, or the cost of construction.

A patent was granted for an improvement in the thermostat, which consists of the adaptation of clock-work, or other motive power, to render its action more immediate and effective, under very slight changes of temperature.

An improvement in the blow-pipe was patented, which promises to be useful to the dentist and jeweller over the common instrument.

It can be used with gas or made to receive its supply of air for the common lamp from a bellows, and is so arranged that, while held in one hand, the flame can be directed upon any point desired by a movement of the thumb of the same hand.

Under Class XVIII the applications have been numerous.

Several patents have been granted for improvements in musical instruments.

A patent was granted for an improvement in tuning pegs for guitars, &c. The improvement consists in making the part of the wooden peg which is fitted to, and turns in, the handle of the instrument, of much greater diameter than the part on which the string is wound.

An alleged improvement in the violin was patented, in which the old form of violin is departed from; in the new instrument, the sides are straight, and the back is concave.

Patents were granted for various improvements in the piano-forte, involving the action, the keys, the bridge, and the sound-board.

In one instrument the sound-board is in the form of a hollow cylinder, having its end secured between two disks or heads; the cap, turning block, strings, and all parts of the instrument, are suitably arranged around it to produce the sound.

The aim of our manufacturers has been to improve the tone and structure of their instruments without at the same time enhancing their price; and it is to be hoped that these efforts may tend to increase the facilities for musical education in our country.

The manufacture of the piano alone has become an important branch of the industry of our large cities.

In the absence of any reliable returns, it is probably safe to estimate the number of pianos made in the United States in the year 1852 at nine thousand, at the aggregate value of \$2,100,000; and that their fabrication gave employment to nineteen hundred hands, at the aggregate wages of \$72,000 per month.

A patent was granted for a printing telegraph that, whether considered as an ingenious combination of mechanical movements, for the harmony of its operation, or for the importance of the result attained, is by far the most interesting invention that has come under my examination.

It is not practicable to give an intelligible description of this machine without drawings, and I shall, therefore, merely remark that it consists of a composing machine, a printing machine, a pneumatic apparatus, and an electric circuit, which enables the operator at one station to print in ordinary typography at the other.

In transmitting a message the machine is put in motion, and a signal is given that calls the attention of the operator at the receiving station. The operator at the transmitting station takes a seat, at what resembles the key-board of a piano, and strikes the keys in rapid succession that

connect with the letters he desires to use, and also punctuates as he prints. At the receiving station the message is printed on a ribbon of paper in bold letters; and when the message is complete, the paper is torn off, and sent to its address.

Several improvements in the printing press have been patented within the past year; and each seems designed to economize its structure, or to accelerate its work.

In one the invention consists in the introduction of conical inking and impression cylinders.

The form is screwed on a revolving disk, either vertical or horizontal in its revolution; the form passes under the inking rollers, and under the printing cylinders to receive the impression, so that one impression is made at each revolution of the form. The conical impression cylinder receives the paper under a clamp hinged to the cylinder, and the clamp is returned at the proper moment to deliver the sheet.

In another press one of the novel features consists in the double use of an air-pump: first, by a puff to press the sheet upon the points for register; and, second, using suction fingers to remove the printed sheet from the press and lay it on the file, or folding table.

A patent was granted for a mechanical typographer, by which, with the necessary practice to acquire a skilful use of the machine, the author can print instead of writing his thoughts.

Under Class XX several patents have been granted.

Three patents were granted for improvements in artificial legs; and in one the model in the Office presents a very near approach to the natural member, both in movement and appearance.

A patent was granted for an ingenious improvement in a pill-making machine. The invention consists in passing the mass between rollers, having hemispherical recesses in each, that match with each other; each roller being surrounded by a thin elastic belt, which is pressed by the mass into the recess, and, when the pressure is relieved by the rotation of the roller, this belt springs out, and thus releases the pill from the mould.

Of the several applications made for patents for medicines during the year not one was granted.

A patent was granted for a galvanic clock, in which the circuit is formed and broken by the movement of the pendulum, which, at the same time, is made to receive equal and constant impulses, while the battery retains sufficient power to raise the armature up to the extent of its motion.

An improvement in the duplex escapement was patented. This invention consists in the substitution of a wheel with three teeth, or ruby pins, in lieu of the common escapement wheel, with fifteen teeth, for which many advantages are claimed besides those accruing from the facility of construction.

Under Class XXIII the applications have been numerous, and a large proportion of them have been patented; while few are marked by any very great artistic excellence.

When we consider the different uses, materials, and modes of manufacture to which design and ornamental decoration may be applied, the wonder is, not that the applications were so many, but that they should have been so few.

The object of the design law would seem to have been to give protection to the pattern produced; but its language is not sufficiently broad to justify such a construction. The Office has, therefore, exercised its utmost liberality in this class of applications, and has granted patents in all cases that possessed sufficient originality, either in the decoration or the configuration of the article produced, to bring it within the spirit of the law.

During the past year there have been three appeals from the decisions at my desk to the circuit court of the United States for the District of Columbia; two of which are still pending, and in the third the decision of the Office was fully sustained.

It would have given me pleasure to have attempted a more extended notice of the business of my desk for the past year, could I have controlled the necessary time; but the calls upon an examiner are so imperative that I am compelled to limit myself to the meagre sketch herewith submitted.

Yours, respectfully,

HENRY BALDWIN, *Examiner*.

Hon. S. H. HODGES,

Commissioner of Patents.

PATENT OFFICE,

December 31, 1852.

SIR: In compliance with your request, I have the honor to submit to you the following report of the transactions at this desk, accompanied by a brief notice of some of the inventions that have been patented during the year in the classes allotted to me.

There remained at the close of the year 1851, at this desk, thirty-one cases unacted upon. During the year 1852 three hundred and ninety-two applications were received, which made the aggregate number of cases requiring examination during the year four hundred and twenty-three. Of this number three hundred and sixty-nine were examined; which left, on the 31st of December, 1852, fifty-four new cases unacted upon.

The number of applications passed at this desk for patents was one hundred and thirty-four; the total number of rejections two hundred and ninety-three; although the number of final rejections will not, probably, exceed two hundred.

The manner in which the rejections are recorded has been so often explained in the previous reports of the examiners, that it is needless for me again to go over the ground, as the same system of recording is still preserved.

The number of applications finally rejected, as compared with the patented, will not vary far from three to one. Each year must necessarily increase the ratio of the rejections, as the field of invention in many of the arts is, to a degree, limited; and as they advance towards perfection, their bounds become more and more circumscribed.

Little more can be expected in the present stage of the mechanical arts, even from our best mechanics, than the improvement and perfection of those machines already in existence, by some change in the mechanical

arrangement or combination of the different parts, so that each part will perform with more efficiency and exactness the functions required, and the article to be manufactured produced at less cost, and in a more perfect and highly finished state.

Some of the patents granted this year display great ingenuity and mechanical skill, showing that the inventors were well acquainted with the principles and mode of action, as well as the defects in existing machines, which they could only have acquired by close observation. In many cases these defects have been entirely remedied, and more perfect and simple machines produced.

The classes allotted to this room are embraced under the following heads:

First. Hydraulics and pneumatics.

Second. Machines for manufacturing lumber.

Third. Machines for manufacturing all fibrous and textile fabrics.

HYDRAULICS AND PNEUMATICS.

In this class are included those machines used for raising, measuring, and filtering water, and machines in which water or wind is used as a motor.

There are six subdivisions in this class, in which fifteen patents have been granted.

Water-Wheels.—Of the three patents granted for improvements in water wheels, one was for a turbine. The orifices of discharge from the buckets in this wheel are capable of adjustment for different heads of water without changing the curvature of the buckets. This is effected by attaching to the bucket a sliding plate of the same width and curvature as the bucket; the moving of this plate outward extends the curvature of the bucket and diminishes the orifice of discharge.

Another was for a mode of packing the joint between the wheel and the chamber that conducts the water to the wheel. The cylindrical chamber, at whose ends are placed the wheels, is so constructed that its upper portion is easily removed, so that the packing, which is divided into two parts, can be adjusted on the lower half of the wheel (which is generally submerged) from the inside of the cylinder, while the upper half is adjustable from the exterior.

Five patents have been granted for pumps and machines for raising water: Among these is a rotary pump, in which a flange, wound spirally around the spindle or shaft of the pump, supplies the place of the buckets generally used. A spring valve, passing through the eduction port in one of the heads of the casing, divides the chamber of the pump, and cuts off the communication between the two ports.

An elastic adjustable bucket for a chain-pump was also patented. This bucket is a hollow spheroid or elliptical spindle of vulcanized rubber; to the end of the spheroid are attached curved disks or plates of metal, passing through the bucket; and, also, through the disks is a metallic spindle, on one end of which is a shoulder which bears against one of the plates, on the other a screw is cut to fit the female screw in the opposite disk. By turning this spindle the disks are brought nearer together or carried further apart, which expands or contracts the elastic bucket.

Two patents have also been granted for improvements in water meters.

A patent has been granted for a mode of attaching to the mains of gas or water pipes, small pipes or cocks. Instead of cutting screws in the main, and also on the pipe to be inserted, a straight hole is drilled in the main, and the end of the pipe or cock to be inserted is turned barrel shaped, and with a shoulder. When the pipe so turned is driven into the hole in the main, the surplus material in the swell of the pipe is drawn out, filling all irregularities in the hole in the main, and forming a perfectly tight and strong joint.

A measuring cock was also patented. Its object is to measure semi-fluids—such as tar, &c.—as you draw them from the vessel.

An adjustable spread for the hose-pipes of fire-engines was patented. This spread is simply a triangular plate attached to the nozzle of the pipe, so as to be capable of adjustment to any angle with the pipe. By elevating or depressing this plate, the water, as it issues from the pipe, strikes it at a greater or less angle, thus changing the circular jet into a broad, flat stream.

LUMBER.

In this class, which embraces all machines for manufacturing timber or lumber, in all its diversified forms, for articles of use or of ornament, fifty-nine patents have been granted during the year.

Saw-mills.—Six patents have been granted in this subdivision. One of these mills is so arranged that, by changing the rake, or the forward motion of the saw as it descends, you, at the same time, change the feed of the log. The ways in which the saw-gate runs are hinged at their top ends; the lower end is turned at right-angles, and passes through the fender posts; to this part of the way are attached means of adjustment, and the adjusting apparatus of the ways are connected together, so that, by varying the angle of inclination of one, all are changed at the same time. The feed motion is communicated to the log by a system of levers acted on by the saw gate. The fulcrum of one of these levers is movable, and connected with the movable ways; so that, in changing the inclination of the ways, you, at the same time, vary the feed motion proportionally.

Two patents were granted for improvements in hanging and driving circular saws.

In one of these the saw is placed, in a horizontal position, between two fender posts; a bar or plate, with bevelled edges, is bolted to these posts, and from this the saw is suspended by a short mandrel passing through the saw, which, on the under side, is flush with the saw plate. The saw is driven by four friction pulleys near its periphery; one set acting on the upper surface through slots cut in the suspension plate; the others on the under surface of the saw plate. These pulleys answer a double purpose: that of driving and supporting the saw. The board sawed passes over the suspension plate, while the log passes beneath the saw. The width of the board that can be sawed is only limited by the distance between the friction driving pulleys.

In the other, a short band passes over the pulley, on the saw mandrel, as well as around an adjustable pulley, hung in a gate, whose centre of

vibration is the driving pulley shaft. The pulley, or saw mandrel, (which is also capable of adjustment,) rests upon the driver, with only the band interposed. The action of the driver is to feed in the band between itself and the pulley or saw mandrel, whilst it is held in close contact to both of these pulleys by the adjustable pulleys in the gate.

Four patents have been granted for improvements in barrel machinery. Two of these were for dressing staves. In one, straight planks are used; the plank passes between concentric planes or cutters, revolving at right-angles to the plank; after passing these planes, the plank is fed by an armed or pointed wheel, whose circumference is proportional to the length of the stave. This wheel gives a lateral motion to the saws or cutters forming the curve for the bilge.

The novelty in the other is the self-adjusting bilge cutters, that adapt themselves to any width of stave passing through the machine; these cutters are operated, and their distance apart regulated or changed, by the stave in its passage. This machine cannot be fully understood or described without the aid of drawings.

Another was for using compressing clamps on the head turner, which compresses the boards forming the head in the direction of the width, by which means oval-shaped heads are made, which, when inserted in casks and subjected to the pressure of the hoops, assume a round shape.

A machine for driving or forcing the hoops on the cask was also patented.

Five patents were granted for boring, mortising, and tenoning machines. One was for an expanding bit. The slots in the sliding plate of this bit are inclined, and through these slots pass screws, attaching it to the bit. Both the stationary and movable parts have cutting lips; that on the movable plate is equal to its width. As this plate is moved out, it is lowered by the inclined slots, which allow the lip to cut. This bit cuts a smooth hole, and is less liable to clog than most expanding bits.

A mortising machine was patented which presents some novelty in the mode of regulating the movements of the chisel. The arm actuating the chisel is attached by a sliding wrist to a lever beam. The sliding of this wrist to or from the centre of motion of this lever varies the length of vibration of the chisel.

Five patents have been granted for improvements in fences; most are for cast-iron and wire-fences. In one of them the rails are made of round or square iron, with eyes or loops turned at each end of the bar. The bar inside of the loop is flattened or squared. The posts are of flat bar-iron, with T-shaped mortises. The loop is passed through the upper part of the T, the lower part of which is of the same width as the flat part of the bar inside of the loop. When the rail is pressed down into the lower part of the T, it is prevented, from its square shape, from turning round; neither can it be drawn laterally, on account of the loop at each end.

Shingle Machines —Seven patents have been granted in this subdivision. In one of these machines the carriage is made double, and the shaving knife placed a short distance forward of the riving-knife. The upper carriage, supporting the bolt, receives a feed-motion, carrying the bolt under the riving knife. A reciprocating motion is given to the lower carriage equal to the distance between the two sets of knives, and, being connected with the upper carriage, imparts the same motion to it. The

living-knife only partially severs the shingle from the bolt. After the shingle is riven, the lower carriage moves forward, taking the upper carriage with it, and brings the shingle under the shaving-knives, which descend, shaving the shingle, and releasing it from the bolt.

Another patent was granted for jointing the sides of shingles, in which the shingle to be jointed regulates the distance between the jointing-knives, and holds them firmly in position while passing between them.

Five patents were granted for turning-lathes. One was for turning mouldings. The several pieces on which the mouldings are to be turned are clamped between two heads, like the staves of a barrel. These heads revolve on a stationary mandrel. A cutter for turning the interior, and forming one side of the moulding, is suspended from this mandrel, and receives motion corresponding to the pattern to be turned. The other side of the moulding, forming the exterior surface of the barrel, is turned in the usual manner.

In another of these machines, a series of cutters, of the form of the pattern to be turned, are secured to a rotating mandrel. The article to be turned is held in a sliding carriage in such a manner that its axis is parallel to the mandrel, and so that it can be turned, and present any number of sides to the action of the cutters. The carriage receives a reciprocating motion, passing transversely to and under the cutters. A prismatic figure of any number of sides can be produced, the pattern varying longitudinally with the form of the cutters.

Planing Machines—Twenty patents have this year been granted in this important class of machines. The attention of inventors of these machines has, in a great degree, been directed to the production of machines that will not infringe upon those already patented. How far they have succeeded in producing effective working machines, that can compete with those already patented, time and the public will determine. Of the above number two were reissues, and four for improvement in tonguing and grooving.

One of these tonguing machines is constructed in the following manner: The knives for cutting the sides of the tongue are placed at right angles to each other in the stocks, with their edges converging so as to meet at the base of the groove. Between these knives are placed gouges, or chisels, to remove the material severed by the side knives.

In another of the machines, reciprocating chisels, placed in front of the stationary tonguers and groovers, cut up and remove the surplus material.

Two patents were granted for planing-machines, in which the stock holding the plane-irons receives a reciprocating action. On the forward motion of this stock the board is planed, being held by stationary clamps firmly to the bed of the machine; on the backward motion it is released from the stationary clamps, and a clamp, attached to the stock, clamps the board between the stock and the stationary bed, and carries it back with it.

The other machine differs from the above in clamping the board, on the back motion of the stock, to a reciprocating bed, connected by rods to the plane stock.

Letters patent were granted for a machine in which the pressure-bar mouth-piece in front of the stationary cutters is dispensed with. The reducing cutters in the machine consist of a double series of plane-irons, alternately inclined in opposite directions. The cutting edges of these

irons are inclined to the plane, and also to the longitudinal direction of the board, at an acute angle; so that the surface of the board is cut into shallow longitudinal grooves of uniform depth. These ridges are removed in passing under sets of stationary plane-irons, arranged in the common manner.

In another planing-machine, reducing gouge-shaped cutters are placed in front of the line cutters; to these cutters a reciprocating motion transversely to the board is given. A reciprocating motion transversely is also imparted to the plane-irons—they alternating in their action, and, as one is carried in one direction, the next preceding is moving in an opposite direction.

A machine for planing mouldings was also patented. Between the different sets of moulding-planes, on the same shaft, are introduced circular saws, to divide the moulding as it is planed.

A machine for manufacturing blind-slats has been patented. In this machine the stiles are bored to receive the tenons of the slats, the rods and slats pricked for the wires, and the tenons turned on both ends of the slat; each operation going on simultaneously. The different parts for several blinds are placed in the machine, and, after being properly adjusted, the several operations above named are performed, without further manipulations from the operator of the machine.

FIBROUS AND TEXTILE MANUFACTURES AND MACHINERY.

In this class, sixty-three patents have been granted this year.

The machinery used in this class of manufacture is generally complicated; and as a description of the machine or invention cannot, in most cases, be understood without reference to the drawings or models, all that I shall attempt will be to communicate the results desired to be effected, without going into a minute description of the machines.

Manufacture of Hats and Felting.—Four patents for machines in this subdivision have been granted.

In one, the bat is hardened on the exhausted cone without being removed; this is effected by placing around the cone a series of conical rollers, to which a shogging and rotary motion is given, in order to interlock and partially felt the fibres as they are blown upon the exhausted cone.

In another of these machines, the hardening process is effected by placing over the "*former*," on which the bat has been deposited, a cone lined with vulcanized rubber, and between the cone and the rubber steam or hot water is admitted; a vibratory motion is given to the cone, which hardens the hat-body.

A machine for planking hats was also patented. The hats are carried between two endless bands to a revolving planking table, and, while passing over this table, are subjected to the action of a vibratory platen.

Two patents have been granted for breaking or hackling hemp and flax. In one of these machines, the flax is hackled by subjecting it to the alternate action of revolving beaters and hackles; the hackles on the end of the machine first acting on the flax are short, and increase in length as they pass to the opposite end of the machine.

Four cordage machines were patented. Two of these were for an improved mode of regulating the speed of the winding-up reel by the

tension of the rope, and diminishing its velocity as each successive layer is wound upon it.

Another was for improvement in cans for holding the strands. These cans are corrugated and punctured with holes, for the purpose of preventing the strands from rising, and to allow the air to pass out; while the can is being packed with the strands, a wing is also introduced into the can, to carry the strands around as you revolve the machine, to prevent its twisting and kinking.

Carding.—Three patents have been granted for improvements in machines in this subdivision.

One was for carding colored rovings. The fillets on the cards are placed a short distance apart, forming rings; the doffer is constructed in the same manner. Different colored slivers are fed into the machine; and, after being carded, the doffer, which has an endwise, vibratory motion, takes them from the card mixing them, which forms a variegated roving.

A machine for combing wool was also patented; but as it is described in the English journals, it would be a work of supererogation to describe it here.

Three patents have been granted for improvements in paper machines and paper.

One was for a mode of drying, by passing the paper between a series of perforated trunks, through which warm air is blown; the warm air comes in contact with both sides of the sheet, and then escapes freely.

Another was for sizing the paper, by carrying it through the sizing trough between endless bands.

A patent was also granted for copying paper, made of equal parts of cotton and Manilla hemp. The advantage of this combination, as set forth by the inventors, is that the great contractile and bibulous property of the grass renders it peculiarly well fitted for this purpose.

Sewing Machines.—The conception and improvements in these machines belong exclusively to this country; and we are indebted solely to American ingenuity for their present perfection.

Seven patents have been granted for improvements in these machines.

One was for the introduction of a stop motion, which, when the thread gives out or breaks, stops the feed. Two others were improvements in the feed motion.

In one of these, the position of the lower needle is regulated by the thickness of the cloth, so that they will with certainty pass through the loops alternately formed on each side of the cloth.

In another of these machines, the feed motion is controlled by the length of the stitch. The bars carrying the needles are held against one side of the guides through which they pass by a spring. This guide is sufficiently wide to allow the bar to vibrate the width of the longest stitch required. The turning of this guide varies the length of the stitch. The cloth is drawn forward by a weight; as one needle is withdrawn, the weight carries the needle (with its bar) that is left in the cloth forward, until the bar is arrested by the guide; this gives the length of stitch to the opposite needle.

In another, a revolving hook, in the cavity of which is placed the shuttle, supplies the place of the second needle, or the vibratory shuttle.

Four patents were granted for improvements in knitting machines.

One of these was for a stop motion, similar to that used in spinning frames.

In another, a rotary machine, a patent was granted for giving the cloth-beam a rotary motion, the same as the needles, in order to avoid twisting the fabric.

Spinning Machines.—Seven patents have been granted in this subdivision.

One is for a cop-spinner. This ingenious and complicated machine is said to form a perfect and regular cop. Each layer of yarn is separated by a dividing thread.

An improved method of holding the washers on the spindles by clasps has been patented.

An improvement in twisting tubes for roving machines was also patented.

Letters patent were also granted for an improvement in ring spinners.

A self-acting mule was patented. Great ingenuity and skill is displayed in this machine, in simplifying the complicated machinery that has been generally thought necessary to introduce in order to give the necessary motions to different parts of the machine. A single, long, irregular cam regulates the motion of the spindles, the backing off, and the formation of the cop. If this machine succeeds in practice, it will be really valuable to the manufacturers.

A stop motion to a fulling mill was patented. The knotting or kinking of the cloth, as it enters the guide-rollers, arrests the motion of the machine.

Three patents were granted for improvements in the mode of making wadding. One of these was a reissue of an old patent.

In another, the bat passes from the sizing rolls over two endless bands placed one above the other, (in the drying chamber,) thus forming an endless band of batting; one layer of batting after another is deposited on this band, and any required thickness of wadding formed.

In another machine, the two surface-bats are sized separately, and the bat is thickened by other bats placed between the surface bats.

Looms.—Twenty one patents have been granted for improvements in looms.

Three of these were for improvements in the pincers and pile-wires for pile fabrics.

Another was for communicating a positive motion to the shuttle-boxes, pattern-wheel, and jacquard apparatus, by means of a star-wheel, which not only gives motion to the parts, but holds them firmly when required.

Another patent was for improvement in jacquard cards.

A very ingenious loom was patented, embracing several improvements—such as moving the shuttle-boxes, operating the needles by forked marches, and stop motions for arresting the loom when the weft-thread breaks, or when the shuttle is in the wrong box.

A vibratory roller temple was patented. This temple, when the lay beats up, recedes a distance equal to the yielding of the cloth, and, on the backward motion of the lay, follows up the reed with the cloth, and holds the web near the cloth-making point.

I will close this report with a notice of a foreign loom, patented.

This invention consists in a peculiar and ingenious mode of raising the loops of such fabrics as Brussels carpets without the use of pile wires. The mode by which this is done is by partially beating up certain picks of the weft-threads as they are woven into the warps; that is, leaving a space between two of the picks, or shoots of weft, and then throwing in a number of close shoots, and, after that has been done, driving the whole of these successive shoots firmly up on the foundation warps to the previously-formed work, by which means the terry parts of the work, occupying the space between the open picks, will be puckered into loops on the surface of the fabric, and form the raised portion of the warp.

In effecting the above object it is necessary to loosen such portions of the warp as are necessary to form the loops, and also to tighten the ground warps, whilst the lay is beating up the weft, to make fast or secure the loop.

The mechanism by which this is accomplished is too complicated to explain without the aid of drawings.

The importance and general usefulness of the machines embraced in this class are worthy of a more extended notice given to them; but the necessary brevity of these reports will not admit of it.

Respectfully submitted:

F. SOUTHGATE SMITH,
Examiner.

Hon. S. H. HODGES,
Commissioner of Patents.

SIR: In compliance with your request, I have the honor to submit the following report of the business at my desk during the past year:

At the beginning of the year, eight cases remained over from 1851. During the year, 511 new cases were entered, 141 patents were ordered to issue, and 268 rejections were made. Of these actions about 60 were upon cases entered in 1851. At the close of 1852, 179 cases remained unexamined.

By the energy and zeal of my predecessor, Mr. Samuel Cooper, the desk had been entirely cleared at the commencement of the year. Illness, caused by severe labor, compelled a temporary cessation from business before the date of his resignation; while the interval of a month before I entered upon my duties, added to the above-named causes, produced a great accumulation of business. The attempt to decrease the number of cases at once by hasty action, would have ended in no advantage to the Office. I have been content, therefore, to allow this accumulation nominally to increase, while engaged in obtaining some familiarity with a whole class of cases before proceeding to act upon any one of them.

I cannot neglect this opportunity of expressing my thanks to the whole corps of examiners for the aid which they have at all times cheerfully afforded me.

One of the disadvantages of an accumulation of business—an increase of correspondence—has been met by the industry of my assistant, Dr. Daniel Breed, to whose aid, in this respect, I am especially indebted.

As the actions of the preceding year are mostly those of my predecessor, my acquaintance with the individual cases patented has been only incidental; and my duties allowing me but little time for the purpose, but a brief notice of cases can be made.

Civil Engineering and Architecture.—In this class 38 patents have been granted. These may be classified as follows:

Switches	-	-	-	-	-	-	-	-	-	-	-	5
Railroads, miscellaneous	-	-	-	-	-	-	-	-	-	-	-	7
Hydraulic works	-	-	-	-	-	-	-	-	-	-	-	5
Excavating and boring	-	-	-	-	-	-	-	-	-	-	-	6
Bridges	-	-	-	-	-	-	-	-	-	-	-	5
Architecture, miscellaneous	-	-	-	-	-	-	-	-	-	-	-	10
<hr/>												38
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The vast increase of the railroads and other public works of the country within a few years, has proved a great stimulus to inventions falling under this and the following class. The larger part of this increase being in the West, it is worthy of note that the scene of activity is shifted to a new field; hence it is not surprising that inventors are found going over well-trodden ground.

From the nature of the case, the number of patents issued under these classes gives no sort of idea of the amount of time and labor spent by inventors, or of the number of applications made to the Office. Most of the inventions concerning railroads have for their object the increase of safety. The immense and rapid development of railroads in the United States, both as regards the lengths of lines and the extent of country covered by them, the want of capital for substantial construction, and thoroughly-organized management when completed, are all causes sufficient to account for the serious accidents which are so frequently recorded. It is true, notwithstanding all this, that there are fewer accidents, in proportion to the number of travellers, by railroads than by any other mode of conveyance; still, when a catastrophe does occur, the amount of damage, the number of persons involved, and the consequent publicity given to the event, all operate to turn universal attention to the contrivance of means for the prevention of similar accidents.

The same thing occurs after each accident, and the result is nearly the same; hence it happens that in this country, as well as abroad, there is a periodical revival of old inventions. When contrivances of this kind come to the Patent Office, the inventor is generally surprised to find that he has been anticipated by a similar, or perhaps identical invention. The result is that a patent, if granted, is not for what the applicant originally intended, but for some minor improvement in a contrivance the main features of which are already well known.

Still, amidst such a large amount of ingenuity, very happy hits are sometimes made, and, for the sake of these, it is not desirable to discourage invention, although, in a large number of cases, the end is disappointment and vexation.

There is an increasing feeling of distrust, on the part of those who have the best means of observing and judging, towards the use of self-regulating safeguards in general, as substitutes for a well organized police. To meet this feeling, contrivance should be directed to the simplification of machinery and improvement in details.

The large scale and costly nature of the objects included in these classes in most cases prevent actual trial on the part of the inventors;

hence, though coming from practical men, such devices are frequently merely speculative. Still the records of the Patent Office for the last few years show some very beautiful inventions, which afford a promise of better things yet to come, and encourage a hope that the economy, comfort, and safety of railroad travel may soon be carried far beyond anything that has yet been accomplished.

During the past year four patents have been granted for improvements in self-acting switches, consisting chiefly in minute details, not explicable without drawings. Another for an improved mode of fastening the point of frogs. An improved wrought-iron railroad chair is made from a plate, rolled with the part intended to be cut and turned to form the lips, thicker than the rest, so that it shall afford greater resistance than in the old form.

An apparatus intended to prevent accidents, is a concave "sound gatherer," placed in front of the engine, and connected by a pipe with an ear-piece close beside the engine driver; in short, a hearing trumpet on a large scale.

An improved form of railroad gate is opened gradually and without percussion; it revolves in a vertical plane, and is returned after the passage of the train, by a spring.

An improved method of arranging the "safety car" on inclined planes has been patented. The car has two wheels on an axle on each side; the axle being allowed to slide sidewise; elevated rails for the inner wheels lift the whole from the main track, and converging, draw the wheels within the line, and, descending more rapidly, the safety car is deposited in a pit under the main track.

Patents have also been granted for improved signals; for a method of ascending inclined planes; and for a simple and convenient spike-drawer.

An improved floating-dock is formed by two cylinders on either side of the vessel; these are raised, as is usual, by pumping out the water contained within them, but the elevation is completed by rotating the cylinders by an appropriate apparatus.

A sort of camel for lighting vessels over bars, &c., is formed of a folding frame, the air chamber of which is made by a sheet of India-rubber, or other water-proof cloth, applied to the upper part of the frame, but open at bottom; air being forced into the cavity, the vessel is raised. The frame is so constructed that no chain or rope is needed to be passed under the vessel. The whole affair may be folded into a small space.

Two improvements in canal locks have been patented: these are intended to economize water and space, but cannot well be explained without drawings.

Another improvement provides the means of bracing cast-iron caissons.

Under the head of excavating and boring machinery, are to be noticed the following:

An improvement on the more common form of dredging machine; another with scraper advancing on the bottom, and capable of being enclosed so as to retain the whole contents until removed to the place of deposit. A submarine auger, the pod being hinged, and so converted into a bucket, brings the material to the surface. An improved borer is rotated by a twisted flat bar passing through a suitable brace in the hole.

Justice to those who have already obtained patents for forms which answer very well, would require that care should be taken not to patent mere trifling variations, under the bare assertion that the difficulties of the contraction had been more successfully met.

Several of the patents granted during the past year seem to be improvements dictated by the imperfections of known forms.

The brakes patented are, in part, modifications of those already well known. One increases the friction by which the rubbers are brought into action by a number of plates; being a sort of reduplicated friction clutch. Another is operated by steam introduced by a flexible pipe into a cylinder between the wheels; the piston moving downwards, by a wedge shaped head, acts directly upon the bars carrying the rubbers. In another, the brakes can all be rendered inoperative at once by the engine driver.

Other features of these inventions, although meriting notice, cannot be described in the space to which I am limited.

A patent has been granted for a "coupling," which is detached the moment a car is thrown off the track. An improvement in "pneumatic springs" is intended to do away with objections to the piston commonly used.

A contrivance for the prevention of accidents consists in a complete metallic casing for the axles and the wheels, except where they touch the rails.

A new foot-car, a cow-catcher, and several forms of truck, have also been patented. One of the "dumping carts" is also self-loading.

The improvements in carriages present no special novelty. Most of them are for slight modifications.

MILLS.

In this class thirty six patents have been granted, which may be subdivided as follows:

Grinding and crushing ores	-	-	-	-	-	-	-	8
Horse-powers	-	-	-	-	-	-	-	5
Miscellaneous flour mills	-	-	-	-	-	-	-	13
Other mills	-	-	-	-	-	-	-	5
Governors, change of motion, &c.	-	-	-	-	-	-	-	5
								<hr/>
								36
								<hr/>

A novel feature in this class, and one connected with the history of the times, is the number of patents for grinding and pulverizing ores; the object being mainly the minute division of the auriferous quarz rock of California.

The machines patented are generally improvements on known forms of crushing or stamping mills. One is furnished with rotating sectional wheels, with grooved surface; any of the sections may be removed, and the wheel, thus rendered lighter, may be employed for softer material. Another is a revolving cylinder, with balls and armed shaft inside. In another, grinding wheels are fed by an endless screw. In another case, balls are used in grooves, between parallel revolving plates.

There are several varieties of stampers. In one, weights are added above the stamper, so that it may be worn away almost entirely without losing its efficiency.

The improvements in horse-powers are generally in details of construction. One is furnished with a governor, which operates a brake, and thus regulates the motion. Another is so constructed that, by slight adjustments, very different velocities may be obtained.

The improvements in flour mills, and appendages, are mostly introduced to meet some difficulty in the operation of machinery now used. Bran-dusters, a flour-packer, mill-spindles, &c., have been patented; also two improvements in millstone dress—one being for buckwheat, the hull of which is too much pulverized by stones used for other grain.

FIRE ARMS.

In this class seven patents have been granted. A self-primer has been patented, in which the percussion pellet, when driven forward rapidly after leaving the magazine, is caught in its flight and exploded over the tube.

Several improvements in breech-loading and other guns, a cannon primer, a bomb lance, and a fire, or rather water-gun, make up the list.

MISCELLANEOUS.

Under this head ten patents have been granted. Among these are two varieties of rat trap; in one of which the rat is killed and thrown out of the trap, which is then reset.

An improved bait for fishing is arranged to float at varying depths, by means similar to those accomplishing the same end in living fish.

Respectfully submitted:

GEORGE C. SCHAEFFER,
Examiner.

HON. SILAS H. HODGES,
Commissioner of Patents.

VIII.

EARLY AMERICAN INVENTIONS.

The following communication is the only one which has been received during the year, on the subject of early American inventions:

PAWTUCKET, *July 19, 1827.*

SIR: I herewith present to the Society the *shears* with which the first cold or cut nail was formed in this country, and probably the first ever cut in the world. They were obtained from Mr. Jeremiah Wilkinson, of Cumberland, whom I visited a few months since, in company with Mr. David Wilkinson, for the purpose of obtaining some information relative to the commencement of the *cold or cut* nail business in the country. Mr. Wilkinson is eighty-six years of age the present month, and is a very intelligent old gentleman. He informed me that he followed the business of making hand cards in the year 1776, at which time he experienced great difficulty in obtaining tacks for the purpose of nailing on his cards, owing to the hostilities between this country and Great Britain, the consequent high price of English tacks, and the tediousness of the process in making them in this country in the old mode by hammering. These considerations suggested to Mr. Wilkinson the idea of making them cold; and, for the purpose of trying the experiment, he, with these shears, cut from the plate of an old chest lock a number of tacks, which he headed in a smith's vice. Succeeding in this experiment, he, from that time, made all the tacks he required in his business in the same way from sheets of iron. Subsequently he made larger nails—such as shingle and lath nails—from old Spanish hoops, which were headed in a clamp, or tool, confined between the jaws of his vice. I obtained one of the heading tools, which I also present with the shears. The first improvements in the method of cutting and heading the nails were made by one Eleazer Smith, from whom I expect soon some further account of the business, when I will lay it before the Society. Mr. Wilkinson also made, during the revolutionary war, *pins* and darning needles from wire drawn by himself, samples of which I also present; and, although the gentleman's peaceful principles would not permit him to take up arms in the revolutionary struggles of his country, he certainly, by his ingenuity and industry, contributed largely towards its independence.

Respectfully,

SAMUEL GREENE.

WM. R. STAPLES, Esq.,

Secretary of the R. I. H. Society.

PROVIDENCE, *November 5, 1852.*

I hereby certify that the above is a true copy of the original letter in the possession of the Rhode Island Historical Society, and is the only one which they received upon the subject.

H. T. BECKWITH,

Secretary R. I. Historical Society.

IX.

GUIDE TO THE PRACTICE

OF

THE PATENT OFFICE.

SEC. I. INFORMATION FURNISHED BY THE OFFICE.

Before proceeding to furnish such information as this department may with propriety, it will be well to explain why it cannot answer some inquiries which are daily addressed to it. Letters are constantly received, in which the writers, after mentioning some discovery which has occurred to them, wish, before expending the time, labor, and money necessary to mature their invention, to learn whether it is really new and capable of being patented, or whether they have been anticipated. It would be gratifying to comply with these requests, and to communicate the desired information, if it were practicable; and it is not for want of inclination that it is not given, but because the appropriate occupations of those employed in the Office will not admit of their undertaking it. Were the supposed discoveries ever so well digested, and even reduced to actual practice, to determine whether they are new and useful—in short, whether they are patentable—requires precisely the same course of examination, of scrutiny into their intrinsic merits, of comparison with previous similar contrivances, indeed all the labor and expense, which an application for a patent would demand. Now, there has not been for years a period when the examiners have been able to keep pace with the applications, and to go through with the labors legitimately imposed upon them. They have not a moment to spare for any gratuitous service. Every hour employed upon it must be at the cost of those who have gained a right to their official exertions, by paying the prescribed fees. Others cannot lay claim to them with any justice until they have paid the same price. Besides this, such an examination could not be instituted, and the result disclosed, without committing the Office in a way that would not be endured in the most ordinary tribunal of law. Even a cursory opinion might embarrass the further consideration and disposal of the case, and should not be asked for, any more than the views of a judge upon a ques-

tion which he might be called to try. If adverse parties should come forward and learn that one had been given, it would be impossible to allay their jealousy, or remove the suspicion their denunciations, if they were defeated, would cast upon the proceeding. When it is borne in mind that, in addition to all this, such inquiries are almost always crude and obscure, without model or drawings to illustrate them, and susceptible of infinite modifications, and that under these modifications may lurk the germ of some important invention, which can only be elucidated and rendered distinct by a long course of examination and discussion, (as often happens in the case of patented inventions,) it is obvious that the only alternative is to uniformly decline answering them. Neither can a response be given to such letters as contain brief and imperfect descriptions of certain improvements, and ask if they have ever been patented. The writers are not aware of the labor involved in undertaking to furnish such information.

A digest of all the patents which have been granted under this government would furnish much of the information sought by these correspondents. Every inventor might then learn for himself how far he had been forestalled in this country. To a considerable extent, he would have the same means of information as the officials of this department. The publications of foreigners, as well as those of our fellow-citizens, histories of inventions, scientific works, periodicals, and the like, are as open to him as to them. Until such a work is authorized by Congress, his next resource must be the meagre accounts contained in the Annual Reports of the Office, and the records, drawings, and models in its care. The last are arranged and spread before him as amply as the space afforded them will allow, and every facility for examining such as he desires will be accorded to him. Any records and drawings that he calls for will be cheerfully produced for his inspection, and he may have copies of such of them as he considers worth the cost of a moderate fee. Such as are deposited under caveats, or upon applications for a patent which are still pending, or which have not been withdrawn though rejected, must be excepted. The interests of the parties in these cases cannot well be secured without preserving entire secrecy, and no information respecting their claims can be furnished without their written consent.

Neither can the Office volunteer any opinion upon the numerous questions which may be raised in patent suits. Inquiries as to the mode of prosecuting for infringements, as to the probable results, and others of this nature, must be addressed to those who devote themselves to such matters. The province of this department is to give information respecting only its own rules of practice. For the same reason, all questions as to the value of any invention must remain unanswered.

SEC. II. RULES OF CORRESPONDENCE.

All correspondence must be in the name of the Commissioner of Patents; and all letters and other communications intended for the department must be addressed to him. If addressed to any of the other officers they will not be noticed, unless it should be seen that the mistake was owing to inadvertence.

Where an agent has filed his power of attorney, duly executed, the correspondence will, in ordinary cases, be held with him only. A double

correspondence with him and his principal, if generally allowed, would largely enhance the labor of the Office. If the principal becomes dissatisfied, he must revoke his power of attorney, and notify the Office, which will then communicate with him. For the same reason the assignee of the entire interest in an invention is alone entitled to hold correspondence with the Office, to the exclusion of the inventor.

It is not understood everywhere, as it should be, that all communications to and from the Commissioner, upon official business, are carried by the mail free of postage.

SEC. III. TO WHAT PERSONS PATENTS ARE GRANTED.

The inventor only is entitled to apply for a patent while he lives. If he has assigned his entire interest, and the assignment has been recorded, the patent may be issued to the assignee; but the assignor must sign the application, and make oath to his being the original inventor, as usual. The mere introducer of a discovery cannot have a patent for it in this, as he may in some other countries.

Upon the decease of the inventor, his executor or administrator may obtain one for the benefit of the heirs or devisees.

Aliens who have resided in this country one year next preceding the date of their application, and who have taken the requisite steps towards being naturalized, by taking the oath prescribed in such cases, have the same privileges in obtaining patents as citizens. Foreigners cannot enter a caveat or have a patent for a design; and they must put the article patented "on sale to the public" in eighteen months after the date of their patent, or it will be pronounced void. Upon applying for a patent, they must pay three hundred dollars, and five hundred if they are subjects of Great Britain. The assignee of a foreign inventor, though a native citizen, must pay the same.

Where several have united in a discovery, so that neither can consistently swear that he believes himself to be "the original and first inventor," they must all join in the application. No one of them can apply alone; much less can each of them have a separate patent.

SEC. IV. FOR WHAT DISCOVERIES PATENTS WILL BE GRANTED.

It is not proposed to even mention under this head all the principles which govern inquiries respecting the proper subjects of patents. Many of the most important of them have been greatly disturbed, and all are liable to serious modifications by the courts. They require, besides, such an amount of comment, of explanation and illustration, to prevent their being misunderstood, and encouraging unfounded expectations, that nothing less than a volume would do justice to the subject. It would be as idle to undertake embodying them in a pamphlet, as the law of contracts, or that of bills of exchange and promissory notes. Several valuable treatises upon this subject are already before the public; and those who wish for full and authentic information respecting it are referred to them. In these pages they will find only a few of the plainest and best settled rules. The responsibility of deciding whether their discoveries justify their applying for a patent, must, after all, rest with

themselves. This Office can give them no further light until they come with a formal application.

The productions of human ingenuity which may appeal to the laws of this country for protection, may be divided into three classes—Literary Publications, Works of Design, and Arts and Manufactures. The first class, which is regulated by the law of copyright, is intrusted entirely to other departments, and no control over it is exercised by the Patent Office. The other two are within its province.

Of Designs.

The subjects embraced under this head are determined by the third section of the act of 1842.

It will be observed that they bear a strong analogy to those which come within the law of copyright. Foreigners are not entitled to the benefits of the act. The fees for obtaining a patent under it are but half what is required in other cases, and, when obtained, it enures but half as long. If the application is rejected, no part of the fees is refunded, or accounted for on making application to have the same article patented as a manufacture. No provision is made, as the statute is generally interpreted, for a reissue or an extension of the patent, an additional improvement, or a disclaimer. There is, in fact, very little in common between this class of subjects and those which are contemplated in the great bulk of the Patent laws. The course of proceeding to obtain a patent for a design is, notwithstanding, the same as in other cases. A petition, specification, and oath must be filed, substantially according to the forms contained in the Appendix; a specimen with duplicate drawings must be deposited, and the fees be paid, before the application will be taken up for examination.

Of Arts and Manufactures.

The productions of ingenuity which constitute the other class, and are the chief objects of the several acts relating to patents, are defined by them to be “any new and useful *art, machine, manufacture, or composition of matter*, or any new and useful *improvement* of any art, machine, manufacture, or composition of matter.”

The discovery of any new principle merely is not entitled to a patent. It must be first reduced to practice; must be made available in some practical form. To have found out that a blast of hot air instead of cold would increase the product of a furnace, and change the nature of the iron, was not enough. But when one set of machinery had been contrived by which this was carried into effect, it was held that the patentee was protected, not only in the use of the particular machinery employed by him, but in the use of the hot blast in every form. Other machinery, better calculated for the purpose, was held to be an infringement.

The discovery of any new natural substance is also precluded by the above language, and entitles no one to the exclusive use of it. Applications are often made by persons who have found a mineral paint; but they have been uniformly denied of late years, unless new qualities are imparted to the substance by an artificial process.

A mere change of proportions is not regarded, unless some new and useful result is effected. That may, however, consist in the production of a known article at a cheaper rate. A patent having been obtained for an improvement in making friction-matches with a new compound, objection was made to it because the same ingredients had been used for the purpose before; but the objection was overruled, and the patent sustained, on the ground that they had never been employed in the same combination.

So the mere substitution of one well known mechanical equivalent for another, as of cog-wheels for belting, is not regarded as an improvement within the language of the act.

It is a common thing, however, to grant a patent for a new combination of well known mechanical contrivances for a certain purpose, if the purpose is by these means better accomplished, or at less expense. And where a combination would be thus protected, if all the parts were old, and it embraces some new device, both the combination and device may be protected under the same patent.

The application of any known process to effect a new result, entirely different from any former one for which it has been employed, is frequently patented. The use of the flame of gas to singe off the superfluous and loose fibres of lace was held to be such a new application. On the other hand, it has frequently been determined that the new object to which the process is applied must not be analogous to the old one; nor is it easy to draw a clear line of distinction between the cases. To curl palm-leaf for mattresses by the same process which had been used before to curl hair for mattresses, was held to be a mere double use (as it is termed) of the process, and entitled to no protection.

A patent may be obtained for an improvement upon a machine already patented; but this does not authorize those who obtain it to use the old machine, with or without the improvement. They must still obtain the consent of the patentee of the old machine. And, on the other hand, he cannot use the improvement without their leave.

If the import of the word "new," which is contained in the statute, is not rendered more clear by what has been said, it will at least be seen, to some extent, what is the nature of the questions which have been raised upon the construction of it. It may be further observed, that the applicant must be strictly the first inventor of the device presented. If it is ascertained that another, in this country, had previously discovered it, the claim of the applicant will be adjudged void, unless the other had abandoned the discovery without perfecting or reducing it to practice. The word "before" in the oath of the applicant, "that he does not know or believe that the same was ever *before* known or used," is understood to mean before the discovery; not before the application.

If an inventor abandons his discovery to the public, he cannot afterwards reclaim it; and even if a patent should be granted for it, it would be declared void. To sustain it would be to entrap those who had meanwhile embarked in manufacturing the article, or using it. So, if he permits the invention to be publicly sold or used for upwards of two years. He has that time for testing its value and perfecting it by experiment, and may for that purpose make sales; but those who purchase are not held to infringe upon the patent obtained afterwards by continuing to use the articles purchased.

If the supposed invention has been previously discovered and patented in a foreign country by another, or has been described in any printed publication, it will be rejected. But the inventor may have a patent here after having obtained one abroad, or when his invention has been surreptitiously patented abroad by another. His term of fourteen years will, in the former case at least, be made to run from the date of the foreign patent. And if his invention has come into common use in this country, and he neglects to apply for a patent for six months after the date of his foreign patent, he cannot have one here.

The word "useful" in the act is to be understood in contradistinction from what is mischievous to society or frivolous, rather than as requiring any particular degree of utility. It is enough that a discovery serves any valuable purpose, though comparatively trivial.

Where several distinct contrivances contribute to produce some new result, and it is essential that they should be combined for the object, they may be embraced in one patent. So to some extent may different analogous modes of producing the same result, provided they operate upon the same principle, and that is distinctly stated to be the foundation of the claim. But where the contrivances are independent of each other, and effect objects entirely distinct, they must be protected by separate patents. It is not enough that they may be combined in one machine, unless they are mutually dependent upon each other, and in consequence of their connexion produce an effect which they could not if they were all made to operate separately upon the same materials.

SEC. V. CAVEATS.

Where an inventor who is not a foreigner wants time to mature his invention, or to prepare the papers, models, and drawings necessary to obtain a patent, he may prevent a patent being granted to any one else surreptitiously, or to a subsequent inventor, by filing a caveat and paying the sum of twenty dollars. Should he afterwards obtain a patent, that sum will be allowed him towards the fee usually required on that occasion; but the law does not authorize the Office to refund any part of it upon his withdrawing his application after a rejection, as it does in cases where no caveat is filed. A form for the caveat will be found in the Appendix.

It should describe something more than the mere effect to be produced. It is quite common to receive one which merely claims the accomplishment of some object, without explaining the means to be employed. This is not enough; it should also disclose the mode of effecting the object, so far at least as it has been matured in the inventor's mind. It is intended for two purposes, and should be particular enough to fulfil them. One of them is to enable the Office to determine whether any contrivance for which a patent is afterwards sought resembles it so closely as to interfere with it. This it is obvious cannot be attained, unless the caveat furnishes some information as to the devices which the inventor has in view. The other purpose, which also requires some account of these devices, is that the Office may see that the invention, when matured and brought forward, is substantially what was contemplated in the caveat. It is well to accompany it with a model and drawings, where it can be done conveniently.

As fast as the inventor makes any progress in maturing his contrivance, and adopts means for securing its successful operation, he may file additional papers describing them, which will be kept with the original caveat, and the date of their reception will be noted. If they have no relation to the subject of the caveat, however, they will be of no service.

One advantage of this proceeding is the facility with which the inventor is enabled to prove the date of his invention. Whenever a question arises on that point, the caveat itself furnishes ready and incontestible evidence; and the benefit of this is not impaired by any lapse of time.

The primary object, however, is to prevent the issuing of a rival patent for the same thing to a subsequent inventor. Before the issuing of a patent, the caveats which have been filed within the year preceding the application are carefully searched. If one is found which may conflict with the proposed patent, the issue is suspended. Notice is thereupon given to the person who filed the caveat so found, and he is required to complete his application within three months. Unless he complies, the Office will proceed with the other case, regardless of the caveat. If, on the other hand, he files his application as required, and it is found to cover the same ground with the one already in the Office, an "interference," as it is termed, will be declared between the two. The subsequent proceedings in such a case are described in Section XIII.

As only the caveats filed within the year preceding the application are inspected on such occasions, the caveator risks the issue of a patent to some competitor, unless, when the year is about to expire, he asks to have his caveat renewed, and pays a new fee. It should also be observed, that the year is reckoned from the time the caveat is made complete and the fee paid, and not from the time of filing any additional papers.

The papers filed upon a caveat cannot be withdrawn or altered; neither are they open to the inspection of the caveator himself, except in the presence of a sworn officer. He may have copies of them, as may others who have his permission in writing. Without such permission, no information respecting them will be furnished to strangers, except to a limited extent in certain controversies which may arise respecting them.

SEC. VI. APPLICATIONS FOR PATENTS.

Applicants would materially abridge the labors of the Office, and facilitate a speedy determination of their respective cases, if they would bear in mind that there are six requisites, uniformly insisted upon, before an application is considered ready for examination. These are—

1. The petition;
2. The specification;
3. The oath;
4. The drawings, and
5. The model, or specimens, where the case admits of them;
6. The payment of the appropriate fee.

Until these are all complete, no application will be set down for examination in its order.

Nothing is gained, therefore, by sending any part of them without the remainder. The result will not be determined any sooner than if they all came together on the same day with the latest. The practice of sending them at different times may, on the other hand, occasion mistakes and consequent delay. It necessarily involves an inquiry, sometimes a laborious one, as new portions come in, for those which have previously arrived, and have been laid aside. And where applicants, with similar names, or with kindred inventions, are before the Office, it is easy to see that no little confusion may grow out of this practice. The Office cannot be held responsible for the consequences. If inventors persist in forwarding their applications in parcels, and at different times, they must not complain of the evils that follow.

Instructions will next be expected respecting the several components of an application.

SEC. VII. THE PETITION.

This must be addressed to the Commissioner, and signed by the inventor, even though it is intended that the patent shall issue to an assignee. If the inventor is dead, his executor or administrator may sign it. An examination of the form for a petition, which is given in the Appendix, will furnish all the information respecting this instrument which is usually wanted.

SEC. VIII. THE SPECIFICATION.

The importance of this document is not easily overrated. The rights of the patentee are limited and defined by the claims embodied in it, and it forms the chief, often the only, rule for determining what they are. It constitutes, in fact, the contract between the patentee and the public; and the other parts of the application are, so to speak, but its appendages. It is very rare that any mistake in them furnishes a ground for assailing a patent; but patents are frequently impeached and annulled for some error in the specification. It is of vital consequence, therefore, that it be drawn up with skill and care.

From the specimens to be found in the Appendix, it will be perceived that, besides describing the thing to be patented, it should, as a matter of precaution, contain full references to the drawings, if the case is proper for them; and some description of them may prove useful. It should be signed by the inventor, (his executor, or administrator,) and be attested by two witnesses.

No great aid is to be expected, in drawing up the substance of the specification, from any forms. The character of the devices to be described varies so widely, and the details to be embodied demand such a different consideration and expression in different cases, that the language adopted on one occasion can rarely be employed on another, without great modification. There is hardly any class of documents in preparing which so little aid is to be derived from precedents; none where more depends on skill, experience, and ingenuity, or where these are more indispensable. Reasons similar to those which forbid undertaking a full discussion of the proper subjects of patents, will permit only

a few of the most prominent and best established principles, which should govern in drawing specifications, to be mentioned here.

Upon referring to the act of 1836, section 6, it will be perceived that one principal object, intended to be secured by the specification, is such a full description of the invention, or discovery, that the public may know how to avail themselves of it with reasonable facility, after the patent has expired. It is not necessary for this that the description should be so minute and full that any man, however ignorant on the subject, shall be able to use it. It is enough if, to adopt the expressions of the statute, it will "enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same." Neither, on the other hand, will it suffice if couched in such terms that none but experts of the highest skill and ingenuity can understand it, or reduce it to practice. A person of ordinary capacity and skill must be able to follow it, and put it in operation, without contriving anything new of his own, without making any additions beyond what is prescribed, and, it has been decided, without resorting to repeated experiments. The latter rule should, however, be qualified. Where, for instance, materials are to be wrought upon which are variable in their nature, and require that the ingredients employed in producing the result should be used in different proportions, it is very possible that the inventor himself could not determine upon the proper proportions without experiment. A patent for a valuable flux would not be vitiated because the quantity to be used with a new combination of ores could be ascertained only upon trial. Such alterations, also, in the dimensions or proportions of the different parts of a machine as an ordinary mechanic would readily see were needed to make it operate successfully, would not impair a patent.

The materials to be employed must be such as are well known to persons conversant with the subject; and if they are described in terms calculated to mislead, it will be deemed a fraud. In fine, care must be taken to disclose everything which is essential towards accomplishing the object to the best advantage, as far as is known. On the other hand, nothing must be introduced as a part of the invention which does not contribute to the result. No secret improvement must be kept in reserve to enable the inventor to command the market after his patent has expired. Neither must he impair the usefulness of his discovery by inducing others to employ something as necessary to success which really serves no useful purpose.

The act of Congress also requires that the inventor should, in the case of a machine, "fully explain" "the several modes in which he has contemplated the application of the principle" of his invention. The safer way to comply with this is to describe expressly one or more methods of application, such as have been found to be most advantageous, and to mention others which are contemplated, as some that may be adopted. Where the invention consists of an improvement upon machinery already patented, this instruction cannot be relied on. The claim must then be confined to the precise improvement intended. If any method of effecting the object is claimed which proves ineffectual, or which has been anticipated, it may invalidate the patent.

The usual and approved course is to describe all the apparatus employed, whether old or new, as far as is requisite to make the operation

of the invention perfectly clear. Such machinery as is already well known to persons of ordinary skill in the business, and in which no alteration is proposed, needs only to be referred to by name—as, for instance, the valves of a pump. Where alterations in the usual forms are necessary, they should be pointed out, and especially everything that is new; all that contributes to the new result, and forms a part of the invention, should be particularly described.

The act further requires that the applicant should “particularly specify and point out the part, improvement, or combination which he claims as his own invention or discovery.” This is usually done by what is technically called a “claim,” in which, after describing the whole mechanism or materials employed, old as well as new, the invention relied on is set out with precision, and expressly claimed. It is usual also to expressly disclaim everything else so described which might be supposed to be embraced in the claim, to the prejudice of the patent.

SEC. IX. THE OATH.

To the specification should be annexed the oath of the inventor, (or his executor or administrator,) the requisites and form of which may be gathered with sufficient certainty from the example given in the Appendix. Where an executor or administrator applies, the law has provided that a necessary and obvious variation in the form be used.

The oath must be administered by some magistrate who has authority for the purpose. If the applicant resides abroad, it may be administered by any minister, chargé, consul, or commercial agent of the United States, or by any notary public or other magistrate of the place, whom they certify to have been duly qualified.

If the applicant is an alien born, but claims that he has resided in this country one year next preceding the date of the application, and has taken the prescribed oath of his intention to become a citizen, the Office requires that all these particulars shall be sworn to by him; and this statement may be incorporated with the usual oath.

SEC. X. THE DRAWINGS AND MODEL.

These must be invariably furnished wherever the case admits of it. They are frequently omitted by the applicant, because he supposes that his invention can be clearly understood without them. This may be true, but they are wanted for other purposes. The drawings and models in the Office form the readiest and most usual means of ascertaining what inventions have been under consideration. The information which lies buried among the files and records is thus spread out before the eye, and is made accessible at a glance.

Duplicate drawings will hereafter be required in every case. They should be on sheets separate from the other papers, from eighteen to nineteen inches in length from top to bottom, and not less than thirteen inches across nor more than twenty-five, unless more space is necessary to exhibit the device or machine with clearness. One of them, which is to be kept in the Office for reference, should be on stiff drawing paper. The other, which is intended to be attached to the patent, should have a margin of one inch, at least, for that purpose on the right hand side, and should be on some material that will bear folding and transportation.

They should be executed in artistic style; and such parts as cannot be otherwise made to appear, must be represented in detail, by plans and sections, which should be numbered and described in the specification. Each part should be distinguished by some one number or letter having the same shape wherever that part is delineated in the drawings, and should be referred to in the specification by such letter or number. It is always safe, and may be found essential, to have them signed by the inventor, and attested by two witnesses, like the specification.

The Office cannot prepare drawings to accompany the applications. It furnishes certified copies of such as are on file, in proper cases, to those who call for them, but employs no one to draw for other purposes.

The model should be made of durable materials, and be firmly constructed, so as to bear the frequent handling to which it is necessarily exposed. If of any soft wood, it should be painted, stained, or varnished. Its external dimensions should not, if practicable, exceed one cubic foot in measure. The name of the inventor, and that of the assignee, if the patent issue to him, should be permanently affixed to it, either by engraving or otherwise.

When models or specimens come unaccompanied with a name, so much difficulty has been felt in assigning them to their proper destination, that the Office cannot answer for them if they are mislaid or even lost.

Where the invention consists of a composition of matter, samples of the ingredients, sufficient for the purposes of experiment, and also of the composition itself, must be furnished; also specimens of any article of manufacture for which a patent is sought.

No model can be withdrawn, except when the Office requires some defect to be corrected in it, or new drawings to be prepared from it.

"Neither models of machines, nor the substance of which they are usually composed—wood, glass, tin, or other metals—are entitled, by law or regulation, to transmission in the mail; and the mailing and forwarding of them will be refused in every instance," &c.—(*Extract from a letter addressed by the First Assistant Postmaster General to the Commissioner of Patents.*)

Models and specimens may be sent to the Office by express, if without charge to it; or they may be deposited with either of the following agents, who will forward them at the expense of the Office.

Agents authorized to receive Models and forward them to the Patent Office:

- The Collector of the port of Portsmouth, New Hampshire.
- The Collector of the port of Portland, Maine.
- The Collector of the port of Burlington, Vermont.
- The Collector of the port of Providence, Rhode Island.
- The Collector of the port of Boston, Massachusetts.
- The Collector of the port of Hartford, Connecticut.
- The Collector of the port of New York.
- The Collector of the port of Philadelphia, Pennsylvania.
- The Collector of the port of Baltimore, Maryland.
- The Collector of the port of Richmond, Virginia.
- The Collector of the port of Charleston, South Carolina.
- The Collector of the port of Savannah, Georgia.

The Collector of the port of New Orleans, Louisiana.

The Collector of the port of Detroit, Michigan.

The Collector of the port of Buffalo, New York.

The Surveyor at St. Louis, Missouri.

The Collector of the port of Cleveland, Ohio.

The Surveyor at Pittsburg, Pennsylvania.

The Surveyor at Cincinnati, Ohio.

The Surveyor at Louisville, Kentucky.

Upon the subject of fees, Section XXIII is referred to as furnishing, in connexion with the remarks already made, all the needful information.

It is proper here to repeat the caution already given, that until the petition, specification, and oath are filed, the drawings and model or specimens deposited, and the fees paid, the case is not regarded as ready for consideration; and it will not until then be set down to be examined in its turn.

SEC. XI. PROCEEDINGS OF THE PATENT OFFICE UPON AN APPLICATION.

The leading principle is, that applications shall be taken up by the examiner within whose province they fall in the order in which they have been rendered complete, by a compliance with all the requisites. He may, notwithstanding, take up one out of its turn, if it belongs to a class upon which he is engaged, and he finds that it will facilitate his labors. In cases of supposed interference between two or more applications, they must necessarily be considered together when the first comes up. If the inventor has already obtained a patent in another country, his application is entitled to immediate consideration if the business on hand will permit it; because the patent issued here can run but fourteen years from the date of his foreign patent, and every day's delay is a loss to him. Applications for additional improvements, reissues, and extensions, are entitled to a priority for a similar reason.

If the specification, drawings, or model are found to be defective, they will be returned with instructions how to correct them. If, however, they are altered at any stage of the proceedings, they are not entitled to the consideration of the examiner anew, until all the cases are disposed of which have been filed before the amended documents were received back. In order to secure an early place upon the list, applications have been hurried in without due preparation, and sometimes in so crude a state as to occasion a great deal of needless labor. The rule announced above seems necessary to discourage such a practice, and does no injustice, since the amendment is an admission that the papers were not complete. The Office reserves the right, nevertheless, to take up each case, when once reached, as often as it comes back, and to bring it to a final determination with all despatch, provided it is satisfied that due pains have been taken to perfect it, and to save labor.

Should the applicant, instead of amending his papers, have new ones prepared, he must return the originals to this Office. Until that is done, the case will receive no further consideration.

If the character of the invention is changed by any alteration or addition after the application is filed, the original application must be withdrawn, and a new one filed with appropriate drawings, &c., and the fees

must be paid anew; a deduction being made of two-thirds of the fees paid on the former application, unless a caveat fee was reckoned towards it.

If the examiner finds that the claims advanced are not patentable, the applicant will be notified of their rejection and of the reasons. If the objection rests upon the particular invention having been previously known, he will be furnished with a reference to the patent, the book, or other work in which he has been anticipated, or with other sufficient information. He may examine the references in the Office, if he is here; or, if at a distance, he will be furnished with copies or extracts, for the legal fee. If he is not satisfied upon an examination of the references, he may, upon submitting his views in answer to them, have a re-examination. He may also, if he desires, have an interview with the examiner, for the purpose of further explanation, at certain hours which have been designated. These are from two till three in the afternoons of Monday, Wednesday, and Friday of each week. It would be impracticable for the examiners to accomplish their work, if they were subject to interruption at other times; and they must not be, save in extraordinary emergencies.

After a second rejection the case is not entitled to any further examination, and will not hereafter receive one, unless under peculiar circumstances. When it has been twice deliberately pronounced upon, the Office may be fairly presumed to understand it then, if it ever will. Before it is thus rejected, however, it will be held under consideration, if desired, as long as there is reason to suspect that the application may have merits which are not yet developed. It is not forgotten that improvements of great value have eluded careful investigation, and have been elucidated only at the end of repeated examinations. In view of this fact, the final decision will always be suspended until the Office becomes perfectly satisfied that the case presents no patentable feature, or other reasons render a determination necessary. There must be some limit to the investigation; and in plain cases, or where no ground is seen for anticipating a favorable result, the Office must be permitted to say so, and to address itself to other applications which are always waiting. Nothing more can be reasonably expected from it; and if the applicant still considers it to be in error, his appropriate remedy is by a resort to the appellate tribunal. It is not often that the Commissioner is able to investigate a case in person, and only in very especial circumstances can he undertake it.

So many mischiefs have grown out of permitting an appeal to one Commissioner from decisions made under his predecessor's authority, that a rule has been adopted, that no deliberate decision of one Commissioner shall be reversed by another. And where a claim has been twice rejected under one Commissioner, it is deemed equivalent to a deliberate decision, and should not be reversed by his successor, unless it is shown that great injustice and wrong have been occasioned. It is better that the party should be required to withdraw and file a new application, which will cost him but ten dollars, than that the force of so salutary a rule should be weakened.

If the applicant acquiesces in the rejection of his claim, or deems it not worth prosecuting, he may withdraw his application; and on sending to the Office a certificate to that effect, and a receipt for the money, such

as are found in the Appendix, he will have two-thirds of the original fees advanced by him refunded, except where an appeal has been taken. He must also give directions whether he will have the money sent to him by mail in specie, or paid to his order at the Office. This department is not at liberty to make payments in bills.

It is proper to observe here that no part of the fees paid upon filing caveats, applications for designs, for reissues, extensions, or additional improvements, can be refunded upon withdrawing.

The drawing designed to have been annexed to the patent, had one been obtained, will also be returned on withdrawing—the other and the model are retained; and if the applicant has obtained possession of them for any purpose, he must restore them before his money will be refunded to him.

If the applicant esteems the claims, as modified by the decisions of the Office, so valuable as to warrant his taking a patent, he must amend his specification and claims pursuant to the instructions given him. The statute requires that he should make oath to them anew, but this is not always found necessary. Cases may arise in which the Office will feel constrained to insist upon it.

Personal appeals and importunity need not be employed by any one, and will prove of no avail in causing the Office to deviate from its prescribed course of business. This will be inflexibly adhered to as the only means of preventing the loss of time and the trouble which would be expended in such attempts, both on the part of applicants and of the Office. Every man would protest against his own affairs being delayed by such interference on the part of others, and should forbear resorting to it himself.

SEC. XII. THE PATENT.

The patent is issued to the inventor, if living, unless he has previously disposed of his entire interest in it, and his assignment of it is recorded in the Office. It will then issue to his assignee, if requested. If the inventor is deceased, it will be issued to his executor or administrator, for the benefit of his heirs or devisees. It will be transmitted to the patentee by mail, unless directions are given to the contrary, or a letter of attorney is on file authorizing some one else to receive it.

It usually bears date at the time it is issued, but may be antedated six months if it is desired, and the application has been on file so long in complete form. If the inventor has obtained a patent in a foreign country, the one he obtains here can run but fourteen years from the date of the other. It is questioned whether this restriction applies where the invention has been patented abroad surreptitiously, or without the concurrence of the original inventor.

A penalty of one hundred dollars is imposed upon every patentee, or his assignee, for neglecting to stamp or mark the date of his patent upon every patented article offered for sale. If it is incapable of this, the package containing it must bear the date. A like penalty is inflicted upon every person who thus stamps or marks an article that has not been patented, as if it were.

Thus far, these pages have been occupied with instructions relative to the ordinary routine pursued upon applications for patents. There re-

main certain other proceedings, which involve a departure from the usual course, though they are becoming frequent, and require some explanation.

SEC. XIII. INTERFERENCES.

Whenever it is seen that two applicants are claiming the same invention, it becomes the duty of the Office to declare an interference; and further proceedings are suspended, in both cases, until the question of priority is determined. So if there is reason to apprehend that an application conflicts with a caveat filed or renewed within a year, the caveator is forthwith required to complete and file an application within three months; and if, on its coming in, the parties are found to claim the same invention or discovery, an interference will be declared, as in the other instance. Whenever, also, an applicant claims anything already embraced in an unexpired patent, and, on being informed of it, insists that he is the prior inventor, the Office will, at his request, declare an interference between him and the patentee.

Whenever one is declared, a day is appointed for hearing the question, and the parties are notified. Their testimony must be taken in writing, by way of deposition. Instructions as to the mode of proceeding in taking it, are to be found in Sec. XIX. The testimony, and all other documents relied upon, must be filed on or before the day appointed for the hearing, or they will not be considered in the case. If either party has been prevented from taking testimony, or otherwise preparing for the trial in season, without fault on his part, the Commissioner will, at his discretion, allow him further time. To obtain this, the party must apply for it in writing, as soon as he is made aware of the hinderance, and show that he has used reasonable diligence, and how the delay was occasioned. He must state all this fully, and support the statement by his oath.

The arguments must usually be filed with the other papers; but where no opportunity has been enjoyed of inspecting the testimony before, or for other good reasons, the parties will be indulged with a short delay in presenting them.

When the interference arises between an application and a patent already issued, the Office has no power over the patent, though it decides in favor of the other party. Where it is between two applications, the unsuccessful party will be allowed a limited time in which to appeal; and if he does, the patent will be withheld until the result is determined. If no appeal is taken when the time has expired, a patent will be ordered to issue to the other party, if he is otherwise entitled to it.

SEC. XIV. APPEALS.

It has been adjudged that the decision of the Commissioner, granting a patent, is not subject to an appeal, even in cases of interference. When he refuses to grant a patent, and in that instance only, an appeal may be taken by the aggrieved party to either of the judges of the circuit court of the District of Columbia. Before it will be treated as an appeal, the following preliminary steps must be taken:

1st. The appellant must notify the Office of his taking the appeal, which he may do by filing a formal prayer for one.

2d. He must also file in the Office a statement of the reasons upon which he founds it.

3d. He must pay into it the sum of twenty five dollars.

These requisites having been complied with, the appeal will be considered complete. A petition must then be presented to the judge, setting forth the proceedings in the case before the Patent Office succinctly, and the petitioner's compliance with the requisites for an appeal, and praying that the appeal may be heard. To the petition must be annexed an affidavit of the truth of the facts stated therein, or the certificate of the Commissioner that the requisites of the law have been complied with; which will be furnished upon presenting the petition at the Office for that purpose. The act of Congress requires that the judge should then give the Office notice at what time and place he will hear the appeal, and should direct it how to give the parties interested notice.

Blanks for the notice of appeal, the reasons of appeal, and the petition, will be forwarded on request.

Owing to various causes, the practice upon the subsequent proceedings in appeals remains unsettled. This will not, probably, remain so long; and as these cases must be conducted by persons upon the ground, they can readily inform themselves respecting the modes which shall have been adopted. Meanwhile, they are referred to the following rules, which have been promulgated by one of the assistant judges of the court:

Orders in Appeals from the Commissioner of Patents.

"1. In every case desired to be tried before me, the petition must be addressed to me as 'Assistant Judge of the circuit court of the District of Columbia.'

"2. Previous to any action by me, and preparatory to the hearing of any appeal, the party must comply with the requisites of the law in the *Patent Office*; and his petition to me must state concisely the application for the patent; its nature; and, if a case of interference, the residence of the party interested; the Commissioner's refusal; the prayer of an appeal, and notice thereof to the Commissioner; *the filing of the reasons of appeal in the Patent Office*; and the payment into the Office of the sum required by the law. To every petition must be annexed a certificate of the proper officer that the requisitions of the law have been complied with, or an affidavit of the truth of the facts stated in the petition. No notice to the Commissioner will be issued until such certificate or affidavit be made or produced.

"3. The appeal will be tried upon the evidence which was in the case and produced before the Commissioner.

"4. All applications must be in writing. The cause will be heard upon written arguments only, unless otherwise specially directed; which arguments must state the points of fact and law relied on, and the authorities in support of the same.

"5. Five days will be allowed, after the filing of the Commissioner's report, to the appellant to file his argument; and the like period will be allowed for any answer and reply: at the expiration of the last of which periods the cause will be taken up and decided, and the papers returned, with the decision, to the office of the Commissioner.

"6. Copies of the Commissioner's report, or grounds of decision, and of the arguments filed, can be had if desired, from the Secretary to be appointed, upon the payment of the usual fees for such services.

"JAMES S. MORSELL,

"Assistant Judge of the Circuit Court of the District of Columbia.

"SEPTEMBER 11, 1852."

On the hearing before the appellate judge, the Commissioner (as well as the examiner in the case) may be examined upon oath in explanation of the principles of the invention, at the request of the judge or of any party interested; and he will submit to the judge the original papers and evidence, with the grounds of his decision fully set forth in writing.

The circuit courts of the United States (and district courts possessing the power of circuit courts) are authorized, upon the application of any party interested, to declare a patent which interferes with another, or with one that has been prayed for, void in whole or in part, or inoperative and invalid in any particular section, according to the interests of the parties to the suit. None but parties are affected by the decision. The same courts may also adjudge an applicant entitled to a patent which has been denied him by the Commissioner, or on appeal; and the Commissioner will issue a patent accordingly, on filing in the Office a copy of the adjudication. The bill must be served upon the Commissioner, if there is no adverse party; and it has been decided in the district court of the eastern district of Pennsylvania, that all such proceedings against him must be instituted in the circuit court of the District of Columbia.

SEC. XV. ADDITIONAL IMPROVEMENTS.

"Whenever the original patentee shall be desirous of adding the description and specification of any new improvement of the original invention or discovery, which shall have been invented or discovered by him subsequent to the date of his patent, he may, like proceedings being had in all respects as in the case of original applications, and on the payment of fifteen dollars, as hereinafter mentioned, have the same annexed to the original description and specification; and the Commissioner shall certify, on the margin of such annexed description and specification, the time of its being annexed and recorded; and the same shall thereafter have the same effect in law, to all intents and purposes, as though it had been embraced in the original description and specification."—Act of 1836, sec. 13.

The claim in the original patent is subject to re-examination upon every petition to annex additional improvements; and if any part of it is found not to have been original when the application for a patent was filed, a disclaimer must be filed of that part, or the specification of claims be restricted, by having the patent reissued before the addition can be made. If the improvement cannot be added, it may be secured by a separate patent, if entitled to one, on the usual terms.

This proceeding is strictly confined to improvements made after the date of the patent. For such as were discovered previously, but were omitted, the remedy is by a new application or a reissue of the patent. (For this see next section.)

A form for an application is in the Appendix.

SEC. XVI. REISSUES.

Where a patent, through inadvertence, contains an erroneous description, or claims that which is not new, and would therefore be pronounced void in law, it may be surrendered; and, on the payment of fifteen dollars, a new patent for the unexpired term of the former will be issued, with a corrected specification.

It has been repeatedly decided under the same statute, though not uniformly, that the Patent Office has authority, upon the same terms, to reissue a patent embracing descriptions and claims for inventions, discoveries, or improvements, which were inadvertently omitted before. But it must be clearly and conclusively shown by testimony, other than that of the parties or others interested, that such inventions, &c., were embraced in the original machine or thing patented. If made after the date of the former patent, the patentee must obtain relief as pointed out in the preceding section.

Upon an examination for a reissue, the original patent is subject to a re-examination, as if presented for additional improvements, and the claims will be modified as found necessary on such re examination. If more claims are embraced than ought to be in one patent, several will be issued on the payment of thirty dollars for each additional one required.

If the inventor has made an assignment of his patent, the right to a reissue vests in his assignee; and in his executor or administrator, if he is deceased.

For form see Appendix.

SEC. XVII. DISCLAIMERS.

If a patent claims anything to which the inventor was not entitled, either because it was not new, or for other reasons, the patent was formerly held void at law, even as to those claims to which he had an undisputed right. To obviate this, it is now provided that he may file in this Office a disclaimer, (for which a form will be found among the others,) in which the objectionable claims are expressly abandoned. He must also deposit a fee of ten dollars. His patent will then stand upon the same footing as if it had originally issued for the valid claims alone.

His executors, administrators, and assigns have the same privilege; and it is only when they become parties to the disclaimer that they can derive any benefit from it, or are affected by it, except such as purchase after it is filed.

SEC. XVIII. EXTENSIONS.

Upon addressing an application for that purpose to the Commissioner, and paying into the Office the sum of forty dollars, he is empowered, upon certain conditions, to extend a patent for the term of seven years, by endorsing upon it a certificate to that effect. The board, which was originally constituted to decide upon such applications, prescribed certain rules for regulating the proceedings, which were recognised by the act of May 27, 1848, and clothed, to some extent, with the authority of a statute. As they are out of print, they are here republished.

Rules of the Board originally instituted for extending Patents.

"PATENT OFFICE, June 21, 1845.

"The undersigned, constituted by law a board to decide upon applications for the extension of patents, have adopted the following suggestions and rules, for the benefit of those persons who may hereafter apply for extensions :

"The questions which arise on each application for an extension are—

"1. Is the invention *novel* ?

"2. Is it *useful* ?

"3. Is it *valuable* and *important* to the public ?

"4. Has the inventor been *adequately remunerated* for his time and expense in originating and perfecting it ?

"5. Has he used due diligence in introducing his invention into general use ?

"The two first questions will be determined upon the result of an examination in the Patent Office; as will also the third, to some extent.

"To enable the board to come to a correct conclusion in regard to the third point of inquiry, the applicant should, if possible, procure the testimony of persons disinterested in the invention, which testimony should be taken under oath.

"In regard to the fourth and fifth points of inquiry, in addition to his own oath, showing his receipts and expenditures on account of the invention, by which its value is to be ascertained, the applicant should show, by the testimony of disinterested witnesses on oath, that he has taken all reasonable measures to introduce his invention into general use, and that, without default or neglect on his part, he has failed to obtain, from the use and sale of the invention, a reasonable remuneration for the time, ingenuity, and expense bestowed on the same, and the introduction thereof into use.

"The report of the examiner, upon the novelty and utility of the invention, will be ready fifteen days before the day appointed for the hearing, which will be open for inspection at the Patent Office; copies of which will be furnished to all parties interested, if desired, on payment of the usual fees for copies.

"In case of opposition by any person to the extension of a patent, both parties may take testimony, each giving reasonable notice to the other of the time and place of taking said testimony, which shall be taken according to the rules prescribed by the Commissioner of Patents in cases of interference.

"All arguments submitted to the board must be in writing.

"In conclusion, the undersigned would remark, generally, that a monopoly of his invention is secured by law to the inventor for the term of fourteen years. This is done with a view to compensate him for his time and expense in originating and perfecting it. At the end of the time for which his patent runs his patent should cease, and the invention become public property, unless he can show good reasons to the contrary. The presumption is always against his application; and if he cannot show that his invention is novel, useful, valuable, and important to the public, and that, having made all reasonable effort to introduce it into general use, he has not been adequately remunerated for his

time and expenses in discovering and perfecting it, the board cannot grant an extension.

JAMES BUCHANAN,
Secretary of State.
EDMUND BURKE,
Commissioner of Patents.
R. H. GILLET,
Solicitor of the Treasury."

On receiving the application, the Commissioner is required to give notice of it, and of the time and place of hearing appointed by him, by advertising sixty days previously in one or more papers printed in Washington, and such other papers published in sections most interested against the application as he deems proper. As the extension cannot be granted after the patent expires, the application should be made early enough to allow not only for advertising sixty days, but for giving the case due consideration after the hearing. Without ample opportunity for this, it cannot be expected that the Commissioner will undertake to decide so important a matter, and grant an extension. He may be bound to receive the application, and act upon it, whenever it is in season for advertising a hearing before the patent expires; but unless he can appoint the day, so as to secure time for deliberation afterwards, he will not feel bound to grant it. Considering the delays which may interpose, and the opportunity which should be given to adverse parties to appear, take their testimony, and prepare their defence, the Office has felt itself justified in requiring it to be filed at least three months before the close of the original term; in cases liable to be much contested, it should be filed still earlier. On the other hand it must not be premature; the Office has refused to take one up when presented a year beforehand. The account of profit and loss might be materially changed during that period.

The following course of proceedings is to be pursued upon applications for extensions:

1. The applicant must file, together with his application, a statement in detail of his receipts and expenditures on account of the invention. Before the hearing, this statement, or a corresponding one, must be verified by his oath; and such further testimony be furnished as will show that he has not been adequately remunerated for the time, expense, and ingenuity bestowed in maturing the invention and in bringing it into use. Should it be required, this account must be brought down to the time of the hearing.

2. It must also be shown, by disinterested witnesses, that the patentee has used due diligence to bring the invention into use, and that his failing to obtain a sufficient remuneration for it is not his fault.

3. It must be shown by like testimony that the invention is important and valuable to the public.

4. The report of the examiner in the case, especially addressed to the question of novelty and utility, will be filed fifteen days before the hearing, and will be open for inspection.

5. Persons who wish to resist the extension must file in the Office a written notice to that effect (with their reasons) at least twenty days before the hearing. They will then be entitled to a copy of the application and of the account, and of any other papers in the case on file. They

will also be entitled to a list of the names and residences of the witnesses whose depositions have been taken by the applicant previously, and they must be notified of the time and place of taking testimony afterwards. And they may proceed to take testimony themselves, giving like notice to the applicant. (As to the mode of taking it, see the next section.)

6. The depositions, arguments, and all other documents relied upon, must be filed in the Office on or before the day of hearing. Such as are received afterwards will be entitled to no consideration.

7. Applications for a postponement of the hearing must be sustained in the same way as when made upon an interference. And they will not be granted at the risk of preventing a decision in season.

8. The case will be determined on written argument alone, unless the Commissioner sees good cause for consenting to a discussion of the merits before him.

After all, the Commissioner is required by law to have a due respect to the public interest in coming to his decision.

SEC. XIX. DEPOSITIONS.

It will be noticed that among the rules adopted by the old board for extending patents is one requiring the testimony to be "taken according to the rules prescribed by the Commissioner of Patents in cases of interference." The latter rules seem in this way to have been recognised by Congress, together with those of the board. They are therefore republished here, and will be considered as the basis of practice in taking depositions.

Rules of the Commissioner of Patents for taking testimony, adopted by the Board for extending Patents.

"1st. That all statements, declarations, evidence, &c., shall be in writing, setting forth, minutely and particularly, the point or points at issue, and shall be verified by oath or affirmation.

"2d. That all statements, declarations, proofs, and evidence, shall be filed in the Patent Office, by the parties respectively, before the day of hearing.

"3d. That, before the deposition of a witness or witnesses be taken by either party, notice should be given to the opposite party of the time and place when and where such deposition or depositions will be taken; so that the opposite party, either in person or by attorney, shall have full opportunity to cross-examine the witness or witnesses. And such notice shall, *with proof of service of the same*, be attached to the deposition or depositions, whether the party cross-examine or not; and such notice shall be given in sufficient time for the appearance of the opposite party, and for the transmission of the evidence to the Patent Office before the day of hearing.

"4th. That no evidence, statement, or declaration, touching the matter at issue, will be *considered* upon the said day of hearing, which shall not have been taken and filed in compliance with these rules: *Provided*, That if either party shall be unable, from good and sufficient reasons, to procure the testimony of a witness or witnesses within the above stipulated time, then it shall be the duty of said party to give notice of

the same to the Commissioner of Patents, accompanied with statements of the cause of such inability, which last-mentioned notice to the Commissioner shall be received by him on or before the day of hearing.

“5th. That all evidence, &c., shall be sealed up and addressed to the Commissioner of Patents, by the persons before whom it shall be taken, and so certified thereon.

“6th. That the certificate of the magistrate taking the evidence shall be substantially in the following form, and written upon the envelope, viz:

“I hereby certify that the depositions of A B, C D, &c., relating to the matter of interference between E F and G H, were taken, sealed up, and addressed to the Commissioner of Patents by me.

J. K.,
Justice of the Peace.’”

In addition to these rules, the following regulations must also be observed:

The notice of taking testimony should be signed by the party, or the magistrate before whom it is to be taken, and should contain the names of the witnesses to be examined.

It must be served by delivering the adverse party a copy, and exhibiting the original if he desires it. If he is not to be found, it may be served upon his agent or attorney of record in this Office, or by leaving a copy at the party's usual place of business. And it must be annexed to the deposition.

The testimony must be taken in answer to interrogatories, and be committed to writing by the magistrate, or, under his direction, by some person not interested in the issue, nor the agent of one who is. The deposition, when complete, must be signed by the witness.

The magistrate must append to the deposition his certificate, stating the time and place of taking it; the names of the witnesses; the administration of the oath; at whose request the testimony is taken; the occasion upon which it is intended to be used; the names of the adverse parties, if any; and whether they were notified and attended.

The forms contained in the Appendix are recommended for observance.

SEC. XX. LOST PATENTS.

Copies of patents granted since December 15, 1836, and afterwards lost, can be obtained from the Office upon the payment of a prescribed fee; and, if duly certified, are evidence wherever the originals would have been.

It is earnestly requested that all patents issued previous to that date, which have not been recorded since at this Office, be forwarded to it for that purpose, and they will be returned directly. It shall occasion the holders no expense.

Information is so rarely wanted at this time concerning patents granted previous to December 15, 1836, and the course to be pursued in restoring such as were destroyed by the fire of that year, that it is thought not advisable to encumber these pages with it. Should it be desired by any one, it will be cheerfully furnished in another form.

SEC. XXI. ASSIGNMENTS.

The inventor may, "by any instrument in writing," assign the whole or a part of his interest, either before or after he obtains a patent. If he conveys an exclusive interest in his patent for any district, the assignment must be recorded within three months in the Patent Office; otherwise another purchaser, without notice, who has his assignment recorded within three months after its date, will hold against the prior purchaser, who has neglected this precaution.

The assignee of the entire interest in an invention which has not been patented, may have the patent issued to himself on recording the assignment.

The receipt of assignments for recording is not usually acknowledged; it being intended to have them recorded and returned in season to answer the same purpose.

The impression that they are to be recorded gratis is entirely erroneous. See act of May 27, 1848, sec. 2; and post, Sec. XXIII, "Fees," &c.

A form for an assignment is furnished in the Appendix.

SEC. XXII. PATENT OFFICE REPORTS.

As each Annual Report embraces the proceedings of a current year, it can only be prepared after the first of January. The printing is not at the control of this department, and is not usually completed for several months, sometimes not for a year.

The copies placed at the disposal of this Office are limited in number, and constitute but a small portion of the edition. They are wholly inadequate to supply its own wants and to furnish to those who have a right to expect it, by contributing to its funds, or supplying information for the Agricultural part. In fact, it has been found necessary, in repeated instances, to purchase copies to meet these demands. The Office is reluctantly compelled, therefore, to decline acceding to the requests of others for the work, and to refer them to the courtesy of their delegates in Congress.

SEC. XXIII. FEES, AND REFUNDING AND TRANSMITTING MONEY.

The fees to be paid this Office are the following:

On every application for a design	-	-	-	-	-	\$15 00
caveat	-	-	-	-	-	20 00
application for a patent, if made by a citizen, or a foreigner who has resided here one year; and made oath of his intention to become a citizen	-	-	-	-	-	30 00
application, if by a subject of Great Britain	-	-	-	-	-	500 00
application, if by any other foreigner	-	-	-	-	-	300 00
application for a disclaimer	-	-	-	-	-	10 00
application for adding new improvement	-	-	-	-	-	15 00
application for a reissue	-	-	-	-	-	15 00
additional patent granted on a reissue	-	-	-	-	-	30 00
application for an extension	-	-	-	-	-	40 00

On every appeal	\$25 00
copy of patent, or other instrument, for every 100 words	10
copy of drawings, the cost of having it made.	
For recording every assignment of 300 words or under	1 00
if over 300 and not over 1,000 words	2 00
if over 1,000 words	3 00

The expense of any copies will be communicated to those who apply for them. All fees must be paid in advance, and in specie, at this Office, or to one of the officers named below. If sent by mail, it must be at the risk of those who send it. The Office would, however, advise, when this is attempted, to confine the money closely to the letter enclosing it, by pasting over it a piece of firm paper, or thin cloth, so that it cannot move around, and wear its way out, as sometimes happens.

If paid to one of the officers named below, duplicate receipts should be taken, which should specify the particular object for which it is advanced; one of which should be forwarded to this Office, and will be treated as a payment here.

Officers who are authorized to receive Patent Fees on account of the Treasury of the United States, and to give receipts or certificates of deposit therefor.

Assistant Treasurer of the United States, Boston, Massachusetts.
 Assistant Treasurer of the United States, New York, New York.
 Treasurer of the Mint, Philadelphia, Pennsylvania.
 Surveyor and Inspector, Pittsburg, Pennsylvania.
 Assistant Treasurer of the United States, Charleston, South Carolina.
 Collector, Baltimore, Maryland.
 Collector, Richmond, Virginia.
 Collector, Norfolk, Virginia.
 Collector, Buffalo Creek, New York.
 Collector, Wilmington, North Carolina.
 Collector, Savannah, Georgia.
 Collector, Mobile, Alabama.
 Treasurer, Branch Mint, New Orleans, Louisiana.
 Assistant Treasurer United States, St. Louis, Missouri.
 Surveyor of the Customs, Nashville, Tennessee.
 Surveyor of the Customs, Cincinnati, Ohio.
 Receiver of Public Moneys, Little Rock, Arkansas.
 Receiver of Public Moneys, Jeffersonville, Indiana.
 Receiver of Public Moneys, Chicago, Illinois.
 Receiver of Public Moneys, Detroit, Michigan.
 Collector, San Francisco, California; and
 Depository, Tallahassee, Florida.

In cases of withdrawal, the money will be paid in specie only, and at the Office, to the person entitled to it, or his authorized agent, or on his order; unless he directs it to be sent by mail, when it will be at his risk.

Money will be refunded in the same way which has been paid in by mistake. The Office is not permitted to disburse anything but specie, and will not be responsible in any case for money sent by mail.

FORM OF DEPOSITION.

A B, being duly sworn, doth depose and say, in answer to interrogatories proposed to him by C D, counsel for E F, as follows, viz:

1. *Interrogatory.* What is your name, your age, residence, and occupation?

1. *Answer.* My name is A B, my age thirty years; I am a carpenter, and reside in Boston, Massachusetts.

And, in answer to cross-interrogatories proposed to him by G H, counsel for I K, as follows, viz:

1. *Cross-interrogatory.*

Signed,

A B.

STATE OF NEW YORK, }
Rensselaer County. } ss.

At Troy, in said county, on the day of , A. D. 1853, before me personally appeared the above named A B, and made oath that the foregoing deposition, by him subscribed, contains the whole truth, and nothing but the truth. The said deposition is taken at the request of E F, to be used upon the hearing of an interference between the claims of the said E F and those of I K, before the Commissioner of Patents of the United States, at his office, on the day of next. The said I K was duly notified, as appears by the original notice hereto annexed, and attended by G H, his counsel.

Certified by me,

L M,
Justice of the Peace.

The magistrate must then seal up the deposition when completed, and endorse upon the envelope a certificate, according to the form prescribed under Sec. XIX, and sign it.

X.

DECISION

OF THE

COMMISSIONER OF PATENTS,

In the matter of the application of Charles Goodyear and Nathaniel Hayward, for the extension to said Goodyear, for the benefit of said Hayward, of a patent granted, February 24, 1839, to said Goodyear, as assignee of said Hayward, for an improvement in the manufacture of India Rubber, discovered by said Hayward.

One of the petitioners, Nathaniel Hayward, having discovered an important improvement in the manufacture of India rubber, as he alleged, filed in this Office an application for a patent to protect it. Pending the application, he executed an assignment of his interest to Charles Goodyear, the other petitioner, and requested that the patent might be issued to him. Accordingly this Office issued to Goodyear a patent for the supposed invention, bearing date the 24th day of February, 1839, and running fourteen years. As the period was about to expire, Goodyear and Hayward united in the present petition, and prayed that the patent might be extended for the term of seven years for the benefit of Hayward. A day was appointed for hearing the petition, and notice of it published, as is usual; and before it arrived, six different parties appeared and filed their reasons against the extension. Among these opponents was Horace H. Day, who appears somewhat prominently among the proceedings noticed on the hearing. The others it is unnecessary to name. The parties proceeded to take testimony, and by the day appointed had filed depositions taken for the occasion, and other documents, amounting in all to several thousand pages, and including the exhibits and records in a large number of suits instituted upon this and other patents, and growing out of them. In view of the immense bulk of this testimony, the importance of the questions involved, and the interests which were at stake, I consented to depart from the usual course of the Office, and hear oral argument. This was commenced upon the 2d day of February, and continued through six days. The questions arising in the case were certainly discussed with great ability; but the expectation of saving time was so far from being fulfilled, as to afford but slight encouragement for repeating the experiment.

The first objection in order urged by the opponents derives its chief title to notice from the zeal and confidence with which it was brought forward. They contended that Mr. Judson, who signed the name of

Goodyear to the petition as his attorney in fact, acted without instructions, and that there was consequently a fatal defect of parties before the Commissioner. It is true that no written authority was produced for Judson's affixing Goodyear's name, and also true that this Office requires the production of such an authority in some cases before it will recognise an agent. There is no rule, however, which binds it to require, as courts have sometimes done, a power of attorney on all occasions, any more than the merchant who insists on written orders in some instances is bound therefore to discredit every man who professes to be acting for another, and for his benefit, because he can produce none. Some discretion must be allowed in this matter. Judson has been long intimately connected with Goodyear in business, and produces the patent issued to him. He would at law be presumed to act for him if the extension is for Goodyear's benefit. If it is for Hayward's, Goodyear would probably be compelled in chancery to allow his name to be used. I see no reason therefore why Judson's power should be doubted, and cannot entertain the idea of defeating Hayward's claim entirely (for such would be the result of dismissing the petition) upon an objection which would only turn him over to institute a new proceeding, under the most stringent practice, elsewhere.

The next objection presents a question far more grave in its character and more difficult of decision. The authority of the Commissioner to proceed in this case is denied, upon the ground that the patent can be extended only to the assignee; while it has been frequently decided that the benefit of the extension belongs to the inventor alone. It is true, that the 18th section of the act of 1836, upon which this proceeding is founded, uses throughout the word "patentee," and nowhere mentions the inventor *eo nomine* as the person to whom the extension is to be made; and this defect, if it be one, has not been remedied by any subsequent enactment. It is also provided that the patent, when extended, shall have the same effect as if it had been originally granted for the term of twenty-one years; from which it is argued that the assignee alone can have the benefit of the additional term; and that such an absurdity could not have been contemplated by the Legislature. It is further asked, how the assignee in such a case can be compelled to execute the trust arising from the extension being made in form to him? And, in fine, a decision of the board originally instituted for the purpose of extending patents, as well as the former action of this Office, are cited as conclusive upon this subject. As the proceedings thus adverted to do not appear in print, I propose to state them succinctly.

The first of these cases originated in the application of John Thomas for the renewal of a patent which he alleged to have been granted to him on the 26th day of March, 1834, for improvements in floating dry-docks. Opposition being made, it appeared, upon the hearing, that Thomas had sold his invention to Robert Wash and others, to whom the patent was in fact issued. There was evidence also that he had already received large sums on account of the invention; had sold it to different persons, and disposed of the right of extension; and that the purchasers were opposed to the proceeding. It will be remembered that the Patent Office was consumed by fire in December, 1836; so that the fact of the assignment to Wash and others, and the issuing of the patent to them, was not to be ascertained at the Office, and was only elucidated

upon the coming in of the testimony. It is not surprising that Thomas should, under such circumstances, be suspected of attempting to impose upon the Board of Extension, which consisted of the Secretary of State, then the Hon. James Buchanan; the Commissioner of Patents, the Hon. Edmund Burke; and the Solicitor of the Treasury, the Hon. R. H. Gillet. However that may be, on the 22d March, 1848, the Board decided in terms that "the applicant, having assigned all right, title, and interest in the invention, before the letters patent, was not the patentee, and consequently not entitled to the benefit of the act," &c.

In another case, John Hanson and Charles Hanson applied for the extension of a patent (for an improvement in the manufacture of lead pipe which they had invented) originally granted to their assignees, Benjamin Tatham, jr., and Henry B. Tatham, on the 29th of March, 1811, and reissued to the same parties and George N. Tatham on the 16th of March, 1846. The patent was limited in its duration to the 31st of August, 1851, the invention having been previously patented in England. Strenuous opposition was made upon several grounds; but it would seem that the decision was based upon the report of the examiner, which presented the following reasons for rejecting the application: One was in substance the same with that already adverted to, that the language of the statutes on the subject did not authorize the Commissioner to extend a patent issued to an assignee. Another of a similar kind was, that the act of May 27, 1848, by which the power previously exercised by the Board of Extension was vested in the Commissioner of Patents, restricted him to cases "where an application is made to him," "according to section 18 of the act of July 4, 1836." The remaining reason was, in effect, that the act of 1848, above cited, provided that the "Commissioner shall grant or refuse the extension of" a "patent upon the same principles and rules that have governed said Board" of Extension; and this rendered the principle adopted in the case of Thomas (which was stated to be directly in point) imperative upon that functionary. The application was accordingly rejected by the Commissioner, the Hon. Thomas Ewbank, who adopted in his decision the precise phraseology employed by the Board of Extension, and quoted above.

In confirmation of these views, the following order was also introduced on the part of the opponents, which speaks for itself.

"Having, on the application of James Nasmyth, decided that when the patentee has parted absolutely with his invention and letters patent for the same, he cannot have an improvement added to his original specification, because he has no legal possession of the letters patent, and cannot surrender them to the Patent Office for that purpose, the examiners will govern themselves by this decision until it is reversed by appeal from the Commissioner.

"The principle of the decision also applies to reissues. The assignee of a patent only can surrender it for reissue, and not the original patentee, who has not control over it.

"EDMUND BURKE.

"PATENT OFFICE, *November 9, 1846.*"

The petition of Thomas, in the first of the above cases, is quite informal, and does not designate the person to whom the renewal should be granted. As he represented the patent to have been obtained by himself,

there can be no doubt as to the import of his prayer, and that his intention was to have it extended to himself. It is perfectly obvious that, the patent having been issued to Wash and others, the Board of Extension had no power to extend it to him. They could do no less, therefore, than dismiss the petition. Whether they might not have devised a remedy for him, had he presented himself under more favorable auspices, and had his assignees united with him in the proceeding, does not appear. It is sufficient for the present purpose that their decision did not proceed upon the ground that a patent issued to the assignee of an inventor could in no case be extended. Upon that point they gave no opinion.

If, therefore, in the case of the Hansons, whose petition was in proper form, and prayed an extension to the patentees, the Commissioner acted upon the supposition that the previous decision proceeded upon such a principle, and that the act of May 27, 1848, rendered that principle binding upon him, it is obvious that he was entirely misled. It might well bear an argument whether the legislature intended by that act to give the force of a statute to the decisions of the Board. Admitting that it did, it is plain that the Board had never adopted the principle contended for.

The last decision, therefore, can have little weight as a precedent, except what it derives from the form in which it was expressed. But when it is understood that the language was drawn from that adopted in the former case, without advertg to the fact that in that case the petitioner asked an extension to himself when the patent had been issued to others, while in the latter the prayer was for an extension to the proper parties, the inference drawn from the form of the decision is entitled to very little consideration. There were circumstances beside in the case of the Hansons which amply warranted the Commissioner in dismissing their application, and which distinguish it widely from the present. It is only necessary to mention that the patentees were not parties to the proceeding.

The order of Mr. Commissioner Burke denies the right of the inventor, who has parted with his patent, to have new improvements endorsed upon it, or to have it reissued. It would seem as if this was intended to operate where the question arises between the inventor and the assignee. The right of the assignee to the benefit of the proceedings described is expressly recognised in the latter branch of the order; and the order, if it has any bearing upon the controversy, gives countenance to the claims of the applicants.

Upon the merits, I should myself decide the question in their favor, were that the only ground to be considered. As for the expressions in the statute, so much relied upon, it is clear that the word "patentee" is used throughout as synonymous with inventor. Neither that nor the provision that the extended patent should have the same effect as if originally granted for twenty one years, was used with any reference to the right of the assignee, and throws little or no light on the subject. When the act in which they are contained was passed, there was no provision for issuing the patent to an assignee; and whatever the previous practice may have been, as appears from Thomas's case, the passage of the act of March 3, 1837, authorizing such an issue, plainly shows that the legislature had contemplated no such proceeding in the

previous enactment. Had these several provisions been embraced in one statute, there would have been some force in the argument derived from their incongruity. I see very little as it is. On the contrary, the act of 1837 was plainly not intended to restrict inventors in the enjoyment of the rights and privileges conferred upon them, but rather to facilitate them in bringing their discoveries into market, by enabling them to hold out to the purchaser, as an additional inducement, the right of taking out a patent in his own name. The inventor who takes this course is certainly not admonished by anything the legislature have said that he is parting with so valuable a privilege as that of having his patent renewed. There is nothing in the nature of the transaction that renders his claim to it less meritorious, or shows that he does not come within the spirit of the law. That he may be subjected to some inconveniences, and prepare for himself some embarrassments when he comes to avail himself of the privilege, may be true. But, as I understand the rule, it is the inconvenience to the public that authorizes a tribunal to reject a proposed construction of a statute; not the circumstance that the privileges thereby conferred are trammelled with some difficulties, which a different legislation might have avoided. Every objection against the policy of this view may be urged with the same force in case of a sale by the inventor immediately after the granting of the patent. The practice of foreign governments is in accordance with the one advocated, and tends strongly to show its expediency and propriety. And that no such prohibition of it was intended by the legislature is rendered certain, when we reflect that the only effect would be to render nugatory and abolish in practice the provision for issuing patents to assignees. The patent would hereafter be taken out in the name of the inventor, though he had assigned his interest; and he would thus evade the difficulty with ease.

It is said, however, that the jurisdiction of the Commissioner is a limited one, meted out to him by the statute, beyond the express words of which he cannot go. The same objection was raised in the case of *Woodworth vs. Sherman*, 3 Story R., 171; and *Nelson vs. Rousseau*, 4 How. R., 646, where the patent in controversy had been extended to the administrator of the inventor, and it was held to be correct. If, under the word "patentee," an extension may be granted to an administrator, there ought to be little or no misgivings as to the right of granting one to the patentee himself, although he is the assignee; and a trust may be implied in one case as well as in the other. The clause prescribing the effect to be given to an extension, cannot in fine be supposed, with much reason, to militate against the Commissioner's jurisdiction. The truth is, this argument is a misapplication of the doctrine; and the cases above cited answer it so fully as to render further discussion unnecessary.

Were my opinion directly the reverse of what it is, another consideration would impel me to the same disposition of this point. If the applicant is defeated on this ground, he has no means of correcting the decision, if erroneous. The opponents, on the other hand, can test its legality by resisting the patent in the courts. They have protested against being driven to such a remedy, as involving a repetition of the enormous litigation already produced by this and kindred patents. The complaint has little or no foundation. It would be impossible to frame a bill or a declaration for any future infringement upon this patent that

would not be open to a demurrer, upon which the question under consideration must meet with a speedy decision. The more doubt there is about it, the more important it becomes that it should be settled on the highest authority. Until then there will be so much uncertainty and complaint respecting it, that the Commissioner who persists in preventing a resort to the courts of law, by deciding against these applications on this ground, assumes more than usual responsibility. And should the point ever be carried up, and the doctrine be settled in favor of such extensions, he will hardly be able to satisfy his own sense of justice for what he has done, much less that of the public.

It was also urged, with great earnestness, upon the argument, that Hayward had sold out his entire interest in the invention—not merely his right under the patent; that the extended term would belong to his assignees if granted, and should therefore be denied. That depends upon the question whether the inventor can sell this contingent right. There are evils attendant upon recognising such a sale, no doubt. The same emergencies or want of thrift, which have so often led the inventor to sacrifice his original patent, may lead him to part with this last *tabula in naufragio*, if he is allowed to do so. I have yet to learn, however, that Congress have undertaken, in their care for inventors, to secure them against the consequences of their weakness or misfortune by any general provision; or that the Commissioner is warranted in putting a construction upon the law for such a purpose. If this objection were allowed, the patentee who had held his patent fourteen years could not sell his right to a renewal; which it will hardly be contended is law. As to the language which has been used by the courts, they have nowhere said that a patent could not be extended for the benefit of an assignee. They have gone no further than to declare that under certain forms of conveyance the right did not pass to him; and that the statute, which provides that the benefit of such renewal should extend to assignees and grantees, was limited to the right to use such machinery or other article as they had at the time the original term of the patent expired. On the other hand, the court, in *Wilson vs. Rousseau*, 4 How., 646, seem plainly to have recognised the possibility of the right to an extension being sold, and make no question as to the validity of such a contract, to be enforced in equity or treated as an absolute assignment. (See pages 679, 686.) That there is no serious objection to it on the score of policy, may be inferred with confidence from the English practice, under which a large proportion of the extensions recommended by the Judicial Committee of the Privy Council are made to assignees. (Webster's Patent Cases, 725, note.)

In this case moreover the petitioners deny that Hayward has parted with his right to an extension. After an examination of the exhibits referred to, and construing them according to the principles laid down in *Wilson vs. Rousseau*, it seems to me that the conveyances from Hayward do not amount to a sale of his entire interest in the patent, and that he is not estopped by any of the other instruments put into the case. The intention to part with the contingent right to a renewal should, according to the opinion of the court in the case mentioned, be more decidedly and distinctly expressed. As this issue becomes of no importance, however, in consequence of the views expressed in the preceding paragraph, I shall discuss it no further.

The counsel for the opponents next argued at great length that the original patent was void for want of both novelty and utility, and also because Hayward had sold the articles manufactured under his invention for more than two years previous to the date of his application, and had in fact abandoned it. It was to these points that the mass of testimony and exhibits filed in the case was addressed. Although the conclusions to which I have arrived upon other parts of it might have warranted me in dispensing with an examination of this, yet, as far as the brief time allowed for the purpose, and other pressing employments, have permitted, I have looked into it. Nothing will be gained by a minute discussion of it here; it will answer every purpose to briefly record the views I have adopted

A great deal of time was consumed upon the question how far Mr. Day, one of the opponents, was estopped from setting up this objection by various recoveries upon this patent against him and his agents, both at law and in equity. If he had interposed some objection to the proceeding arising out of a contract between himself and the petitioners, he might be estopped by the record of a suit in which the contract had been adjudicated upon. Nothing of that kind is pretended, and it is difficult to conceive upon what ground the doctrine of estoppel can be made to apply. Hayward was no party to any of the records; in fact, he was a witness in some of the suits. There were other opponents to the extension who would not be affected by these proceedings. Had they all, notwithstanding, been between Hayward and Day alone, and had the latter been the sole opponent, it might well be questioned whether he should not be admitted to contest the application on grounds of public policy.

These recoveries were also claimed to be, like undisturbed enjoyment, evidence of the right of the patentee. Had they been founded on this patent alone, they might have been entitled to a good deal of weight. But, on inspecting the records produced, they seem, every one of them, to have counted upon others as well as this. The validity of it does not appear to have been the subject of any separate issue, or of any distinct adjudication. In all these suits the defendants may have seen that the expense of trying the question upon this alone would be worse than thrown away, if the plaintiff could recover upon the other patents embraced. They would have to bear the cost of the investigation, and the verdict would not prevent this patent being set up anew. The victory, therefore, would prove worse than barren. I cannot, on the whole, attribute much weight to these recoveries. The question must be decided upon other grounds.

In order that the Office might have the most satisfactory knowledge, and act intelligently on the subject, the examiner who has this case in charge, Dr. Gale, has instituted a careful investigation in the laboratory, and has reported the result. From this it appears that a chemical affinity exists between sulphur and rubber, in nearly the proportions indicated in this patent; as a consequence and proof of which, the combination, when effected, is no longer soluble in the essential oils or spirits of turpentine, which is commonly used in such operations. To effect this combination, however, it is not enough that the two substances be mechanically blended according to Hayward's process. If nothing more is done, and they are directly submitted to the action of the usual solvent,

they will yield to its power. But if they are subjected to a high heat, as in the process employed by Goodyear under his vulcanizing patent, the chemical union is produced, and they are no longer attacked by it. The same result is brought about by time, as was shown by subjecting to spirits of turpentine goods which were manufactured under Hayward's process several years since. In itself there can be no doubt that the process is valuable, the sulphur operating with peculiar advantage as a drier when under mechanical union only with the rubber. And these experiments show it to be still more valuable as a part of a process resulting in one of the best, if not the best, combination of India-rubber that can be produced.

A like inquiry was made by the same officer into the history of rubber and of its manufacture, as well as it could be ascertained from the records of the Office, and the publications and other sources of information at its command, independent of the testimony filed in the case. From his report it appears, so far as the intelligence thus obtained can be relied upon, that this combination of sulphur and rubber, for the purposes of manufacture, was not known till Hayward discovered it. Taking the report of the examiner for a guide, therefore, the process embraced in this patent was patentable when it was granted, as far as novelty and utility are concerned.

This conclusion is by no means overturned by the testimony, with such examination as I have been able to give it. It may be readily conceived that, without the improvement effected by the lapse of time, or the operation of heat, the value of Hayward's invention would not be duly appreciated, and that it would be superseded in a measure by Goodyear's vulcanizing process. As a natural consequence, it may have been underrated and spoken of in disparaging terms. All this does not determine the question. After looking through the subject, I have no doubt, upon the evidence, that the discovery is valuable, especially as an essential part of an improved process.

Upon the point of novelty, the evidence has taken a wide range. It has not been necessary for me to examine it as critically as if the case had turned upon it; indeed, it was hardly practicable. One thing, however, is plain. Until Hayward published his process, and obtained his patent, the manufacture of India rubber goods was comparatively a failure. Numerous companies embarked in it, and successively abandoned it. We nowhere find it prosecuted successfully. Without canvassing the testimony on this point at length, it is obvious that whatever has been done previously, was a mere matter of experiment. A merchantable article could not be found to supply the market; had there been, it would have poured into it in abundance, as was evinced at last. Such attempts are not allowed to defeat a patent; to do that, it must be shown that they are effectual for practical purposes. Upon any other ground, where a number are simultaneously employed in making a discovery, a patent must be denied to the person who succeeds, unless he can show that he was also the first who conceived it.

The same view should be taken of the evidence respecting the sales made by Hayward before taking out this patent. They are all to be regarded in the light of unsuccessful experiments. He had not, it is plain, discovered the precise process that afterwards accomplished the desired

end. I think they were not such sales of the invention to the public as to preclude a patent.

The same considerations put the question of abandonment at rest. As to that, it may be further observed, that grave doubts have been expressed in highly respectable quarters whether the decision of that question is within the jurisdiction of this Office. It is not expressly delegated by any statute.

Another objection interposed is, that Hayward has not brought his invention into public use; that he has, on the contrary, put it out of his power, by selling it to Goodyear. The last stricture is of very little weight. Selling his invention might be the best means to get the article into market. And though it should be superseded by a better manufacture, it does by no means follow that the owners come within the spirit of the act on this subject. There can be no doubt that Hayward sold his imperfect manufactures before the patent was obtained; and quite as little that both he and Goodyear exerted themselves to their utmost to enlarge their sales afterwards.

There remains the question whether Hayward, to quote the act of Congress, has "failed to obtain from the use and sale of his invention a reasonable compensation for the time, ingenuity, and expense bestowed upon the same, and the introduction thereof into use." In order to satisfy the Commissioner on this point, he has filed an account, under oath, of his receipts and disbursements as is usual. He credits, on the one hand, \$3,000 in all, being the proceeds of the sale to Goodyear of his rights, under this patent. He charges, on the other hand, for his expenses and time, \$1,825 75, leaving a balance in favor of the invention of \$1,174 25. On examining the items, they do not seem intended to exhibit the exact amounts expended, which was not probably in Hayward's power at a time so distant. They are mere estimates; and though not entirely satisfactory, they may be passed over. It has not been deemed necessary in practice to scrutinize such accounts very closely.

Among them, however, is a group of items that calls for a word of comment. It embraces several charges for expenses incurred while engaged for six months in pursuing a course of experiments at Easton, and amounts to nine hundred dollars. The charges are unusual—such as one hundred and fifty dollars for shop-hire, and four hundred and forty dollars for "rubber, sulphur, spirits of turpentine, paints, and other materials and expenses;" but are explained by the fact that he undoubtedly disbursed nine hundred dollars while he was thus engaged. He charges, also, for time while thus employed, five hundred dollars, which he puts upon the ground that immediately afterwards he entered into the service of the Eagle India Rubber Company, at an annual salary of one thousand dollars. This arose no doubt from the undue expectations of that company, and did not last. He had previously labored for two dollars per day; and subsequently, as he testifies, was employed by Goodyear at an annual salary of five or six hundred dollars, though, by a contract among the exhibits, he was at one time to have eight hundred dollars. In addition to this, it is evident from the statement, that the nine hundred dollars disbursed at Easton must have defrayed his personal and other expenses, such as are usually borne out of a man's wages. Up to this period he had accumulated but little, his earnings had been nearly consumed in his support, and this charge of five hundred dollars ought in

justice to be reduced to such a sum as he could reasonably be expected to have saved in another pursuit in that time. How much the balance should be increased cannot be ascertained; it is clear, however, that it is not as large as it should be.

It will be observed that his time and his expenses are charged in the account, and that a balance remains, after remunerating him for both, leaving us only to inquire whether that balance is sufficient to compensate him for his "*ingenuity*." Before entering upon this question, it is proper to notice a position taken by the opponents, who argue that by making a deliberate sale of his invention the petitioner has set his own valuation upon it; and having received the price, as he concedes, he should not be permitted to ask for more. There is great force in this, especially in those cases where an inventor has made a deliberate, understanding sale; but it should be applied with caution where he has been constrained by poverty to make a sacrifice, or where he has acted in ignorance of the merit of his discovery, and has sold for a trifle what has proved of great value to the public. In either instance it seems that he ought to be entitled to the benefit of this proceeding. Both of these considerations, it is alleged, exist in this case. I am not satisfied as to that. The whole transaction shows that Hayward set no trifling estimate upon his discovery. The price he received does not indicate that any advantage was taken of his need, and he was receiving an annual salary of \$800 a year from Goodyear at the time. The merits of the invention will be adverted to directly.

It is insisted, also, that nothing more is implied in the phrase "*ingenuity*" than time; and that where the inventor has received adequate compensation for that and his labor, his ingenuity has been rewarded. In confirmation of this, authentic assurances were given that the former Board for extending patents had never allowed anything for ingenuity over and above time. It would have been more to the point had an assurance been given that they had ever in fact disallowed such an item, and denied a renewal, upon the ground that the applicant had been remunerated for his time and expenses. The use of the word "*ingenuity*" in the act, in addition to the words time and expense, is inconsistent with this objection; it must be presumed to mean something more. Neither is the view thus taken by the opponents compatible with the provision for ascertaining the value of the invention to the public. It is said that the object of this was merely to show that it was of some value; otherwise the Commissioner would not be authorized to proceed. The act, however, calls for "the ascertained value of the invention," which would seem, therefore, to be required for another purpose. Looking at the expressions of the statute, and at the practice upon these applications, I am convinced that two elements are to be considered in determining the question of remuneration for ingenuity. One of these must be inventive genius. It would be wholly unreasonable to pay for the number of years that an uneducated plodder might waste in perfecting a contrivance, and to measure the compensation of a man who, by the exercise of uncommon ingenuity and skill, had produced the same result, by the few days it had cost him. Where the invention displays great talent, therefore, and is evidently the product of extraordinary capacity, it should receive, if otherwise deserving, some corresponding remuneration. The other is the degree of utility possessed by the in-

vention. Judging from the language of the statute, it would seem that the legislature intended to acquiesce in the widely-expressed sentiment that the contrivers of pre-eminently beneficial mechanisms or devices—like the cotton-gin, the steam engine, and the electric telegraph—are entitled to something more than day's wages and the reimbursement of their expenses. I believe it was designed that they should be liberally rewarded somewhat in proportion to the debt which humanity owes them, and as an encouragement to such benefactors.

The question then arises, Does either of these considerations apply in the present case? In the first place, has Mr. Hayward displayed any such extraordinary ingenuity in this invention as entitles him to a large remuneration? It is possible that such ingenuity was called into exercise, while he was engaged in his long course of experiments, for the purpose of maturing his device. There is not a particle of evidence respecting it, however; it is not to be discovered by inspection, as it might be in some machines. In order to give him the benefit of having displayed the ingenuity that the law contemplates, it must be wholly presumed; and without proof of it I do not feel at liberty to infer it. Experiments for the same purpose were at the time constantly making on all sides, and he could not be said to have advanced more than a step beyond others. I cannot, therefore, deem him entitled to any unusual emolument on this ground.

As to the question whether the value of Mr. Hayward's invention entitles him to a reward so much larger than he has received, I have had more doubts. It is said to be worth \$150,000 by itself—\$1,000,000 in conjunction with other patents. By this I do not understand that it is worth so much as a means of levying a contribution, but that the process is worth so much when employed in aid of other patented processes. But have the public derived so large an advantage from it? Looking at the examiner's report, and at the whole testimony, I have come to the conclusion that it was the invention of vulcanizing India-rubber patented by Goodyear that created this new branch of manufacture, and caused this wonderful activity in the market for goods of this material. It is true Goodyear may find it advantageous to call Hayward's invention to his aid; it may be more or less essential to the success of his process. It is upon this point I have labored; and while I incline to the opinion that the invention of Hayward has been a public benefit, the estimate I have formed of it is not so high that I can grant the petition upon the strength of it. The act enjoins that these requisites should be made to "appear to the full and entire satisfaction" of the Commissioner. He must also have "a due regard to the public interest" in making this determination. The community have already contributed immense sums to the owners of these patents, and the question now is whether they shall continue to do so on this. I can only say that I must take a very different view of the case before I can be induced to grant the exclusive interest for seven years longer in this invention, which would necessarily subject the public to a further tax, almost beyond estimation. There is no other alternative; the patent must be extended for that period, or not at all. The case would be different, if, as in England, it was a subject of discretion how long a term to give.

This suggests another inquiry. Admitting that the applicant is on every other ground entitled to have his prayer complied with, and especially that he has never received a suitable remuneration, ought he not to be denied upon the ground that the public have paid abundantly for his improvement? Of this fact there can be no doubt. It would seem as if both of the parties should be taken into consideration; that the inquiry should be not merely how much has the inventor received, but how much have the public contributed? It may be held that the community can afford to be and ought to be generous and liberal towards its benefactors, and cheerfully submit to a double tax for the sake of remunerating those who have bestowed great advantages upon it. That is not an easy position to maintain. Admitting it to be sound, however, there is a danger growing out of it to be guarded against with care. It places the inventor under great temptation to make a nominal sale of his invention, reserving a secret interest, (whether before or after the patent issues makes no difference,) and at the close of the first fourteen years to ask for an extension, on the ground that the sale was on an inadequate consideration. This will not often take place, I trust; yet the possibility of it will entail upon the Commissioner the duty of scrutinizing thoroughly the transactions between the inventor and the assignee.

These considerations have been forcibly suggested to my mind by some statements in the applicant's schedule of receipts on account of his invention, so unusual, as to lead me, in fine, to a careful examination of the transactions between him and Goodyear relating to this patent. As near as can be ascertained from the testimony, they are as follows:

The original contract between them bears date October 19, 1838. Hayward then sold and transferred his right under the patent he had applied for to Goodyear. Goodyear, on his part, was to pay Hayward one hundred dollars down, give him his note, at six months, for nine hundred dollars more; and he also licensed him to manufacture three hundred yards of India rubber cloth per day, under the patent; Hayward, on the other hand, covenanted to release the license upon Goodyear's paying him the further sum of two thousand dollars. Subsequently, it was agreed that the patent should issue to Goodyear; and on the 23d of November, 1838, Hayward executed to him an assignment according to the form prescribed by the Patent Office for that purpose. This did not affect the license, and was not intended to, as evinced by the dealings of the parties.

In the applicant's statement of the account, he says that Goodyear paid him on this note only about \$550, and then uses the following language: "Goodyear being in embarrassed circumstances until 1847, I did not press him for the balance; and although I considered at one time that the license remained mine, because Goodyear had not paid the two thousand dollars in full in the precise manner stipulated, I never elected to enforce such a claim against him, but preferred to hold that the license had ceased, under which I never manufactured; that the assignment rested in Goodyear, and he remained my debtor in the balance of say \$350. Therefore I am content to have the whole \$3,000 charged as received by me."

It cannot but be deemed singular that Hayward should never have collected this balance of one who has been for years floating in affluence. It calls for an explanation. He seems to feel this, and, in place of one, he

gives us the views he has entertained respecting the license being in force. How does this account for the note remaining unsettled? The license was never contingent on the payment of the \$900. It is not easy again to understand the inference he draws—"therefore I am content to have the whole \$3,000 charged," &c. How does this follow from abandoning the license? And when it is seen that, though he "preferred to hold that the license had ceased," yet he does not profess that it was ever discharged or surrendered, I think every one will feel that here is a good deal to awaken inquiry.

The statement that upon the \$900 note Hayward received but \$550, and that \$350 remain as yet unpaid, is, furthermore, not easily reconciled with the deposition he gave in June and July, 1851, to be used on the trial of what is widely known as the "Great India-rubber Case," at Trenton, New Jersey. Among the exhibits there is a contract between Goodyear, Hayward, and Henry Burr, dated November 19, 1845, under which Goodyear licenses Hayward and Burr to manufacture boots and shoes under the present patent and Goodyear's patent of 1844, they paying a tariff of five cents per pair. On being inquired of respecting this contract, Hayward says, in his answer to question 603, that a Mr. Dorr, on behalf of Goodyear, "agreed to give me a license to manufacture 300 pairs of shoes per day for the right I hold under Goodyear, and to pay me what Goodyear owed me. Goodyear owed me a little over \$1,000." In answer to question 605—ultimately "there was nothing paid me only a free license to manufacture 500 pairs of boots and shoes per day, *to offset what Mr. Goodyear was owing me*, and the rights and claims I held under his patent were allowed me by Goodyear." In his next answer he says he was thinking of the five cents per pair, and was mistaken in saying he was restricted to 500 pairs per day; it was 300 pairs per day. In the last statement he was probably misled by the interrogatory, which stated that the contract named 300 pairs per day, and by his recollection of a simultaneous contract under which Goodyear released Hayward and Burr from the tariff on 300 pairs of boots and shoes per day, or 93,900 per year. It will be observed that Mr. Hayward here says that Goodyear owed him a little over \$1,000, and for that Goodyear gave him the license to himself and Burr, who was his partner, and afterward a member of the Hayward India-rubber Company. These circumstances are not introduced so fully for the mere purpose of eliciting the apparent inconsistency of these statements of Mr. Hayward, which may be owing to inadvertence, and throw no great light upon the question at issue; but because they have an important bearing upon the other part of the case. Before proceeding, it should be observed that the counsel for Mr. Hayward claimed that Goodyear had no authority to give the license to Hayward and Burr, having previously granted the entire and exclusive shoe right to the "Goodyear Shoe Company." No such document is to be found among the exhibits. The records of the Office to which general reference was made, have been searched, however; and from them it appears that on the 4th of March, 1845, Goodyear licensed "Goodyear's Metallic Rubber Company" to use his improvements in manufacturing boots and shoes, not exclusively in terms, but with a stipulation not to manufacture himself, nor grant a license to any one else. On this statement alone there is nothing to impair the license to Hayward and Burr, as I apprehend; and

the remedy of "Goodyear's Metallic Rubber Company" must be on the covenant against Goodyear for granting this license. It is perfectly valid in itself. Reference was also made to a contract between Goodyear and Candee, and others; but that bears date July 1, 1848, and could have no effect on this license. The counsel for the opponents were also challenged to deny the assertion that nothing had ever been manufactured under it. But from another deposition of Mr. Hayward, taken in August, 1851, it is plain that Hayward and Burr, and after them the Hayward Rubber Company, were engaged in manufacturing shoes about this time. (See answer to questions 325 to 330.) It does not appear whether they had any other license than that to Hayward and Burr until the contract above mentioned with Candee and others, of July 1, 1848. An obscurity hangs over this part of the transaction, which is not cleared up by anything produced upon the hearing.

Of the \$2,000 to be paid by Goodyear, in order to have the license of 1838 cancelled, Hayward says that on the 3d of April, 1841, he paid \$1,000 in a license to make boots and shoes, which he, Hayward, afterwards sold to Leverett Candee, for that sum. The license, as found among the exhibits, empowered Hayward, or any one he authorized, to manufacture boots and shoes without limit, under any patent Goodyear might have or obtain, paying five cents per pair; the license not to take effect for six months, and to be void if in that time Goodyear paid Hayward \$1,000. Now, in Mr. Hayward's first deposition, he testified on this subject, in answer to questions 209 and 211, as follows: "That \$1,000 I think Mr. Candee paid me." "He gave me \$1,000 for the agreement of April 3, 1841, and \$800 on other claims which I had against Goodyear, which I afterwards gave Goodyear credit for." If Candee purchased this license for \$1,800, it was proper that \$1,000 of the money should be credited in Hayward's account of the invention. But why should Hayward apply the other \$800 upon Goodyear's other debts? Why was it not a part of the proceeds of the invention, and to be credited as such? Goodyear's right to redeem the license was lost; he had no interest in the fund.

The other \$1,000 Goodyear paid Hayward on the same 3d April, 1841, by three drafts on John Ryder, payable at six, nine, and twelve months, on the payment of which Hayward was to execute a release to Goodyear of the license he held under the original sale of October 19, 1838. The release was prepared and left in the hands of counsel to be dated and executed on the payment of the drafts, but, the drafts not being paid, was never perfected. Passing over other negotiations, there is among the exhibits a copy of an instrument dated April 30, 1842, in which Hayward, after stating that two of the drafts on Ryder remained unpaid, agreed that, if they were paid by the 28th June after, Goodyear should have the benefit of it the same as if the drafts were promptly paid. In Hayward's deposition, he testifies as to this paper in answer to questions 677, 679, 683: "I cannot state it was ever in their hands," (those of the counsel.) "I found it among my papers." "I think I gave it to Goodyear."

The documents referred to are all among the exhibits. From them it appears that the original license granted by Goodyear to Hayward, on the 19th October, 1838, is still in full force. It is true that Mr. Hayward, in his account, says he "chose to consider that the license had ceased,"

and that he never manufactured under it. Yet it is undeniable that he insisted upon its being in force at various times. On these points his deposition above mentioned throws some light, and is not a little remarkable.

The 195th question, referring to the present patent, is this: "Are you now a manufacturer of India rubber goods under that patent?" Answer. "I am."

Question 196. "From whom have you a license?" &c. Answer. "The company that I am interested in has a license from Mr. Goodyear," &c.

Question 198. "Who signed your license to use the so called sulphur patent?" Answer. "Charles Goodyear."

Question 199. "When? And is it still in force?" Answer. "The sulphur license was signed in 1838. I should think that license was good. I think I made an agreement with Goodyear to surrender that license to him at a certain period. Owing to his embarrassed circumstances he did not fulfil the agreement, so that I think it stands in force as when it was given."

Again, in answer to question 202. "He has never paid me the \$2,000. I still hold the license." And in answer to question 337, he states that he holds nearly one-fifth of the capital of the Hayward India-rubber Company, the company spoken of in his answer to interrogatory 196.

It is conceded by Mr. Hayward, then, in terms that admit of no misunderstanding, that he still holds in full force the very license for the manufacture of goods under this patent which he obtained from Goodyear in 1838, as part of the consideration for the sale of his invention, and that the company, of whose stock he owns nearly one-fifth, have, in fact, been manufacturing under an arrangement with Goodyear, and Hayward says under this patent. What profits he has made it is unnecessary to consider. If I may conjecture from the value set upon the patent under oath, and from the remarks which have passed upon the subject, they have been an ample recompense for the ingenuity he displayed, estimating it by any principle whatever. It is enough that he has not embraced any portion of these profits in his account. From the testimony he gave in relation to the Hayward and Burr license, quoted above, it would further seem that Goodyear expressly assented to his retaining the license.

Apart from Mr. Hayward's admissions, it is not to be denied that he has been a large stockholder in a company working at great profit under this patent for his own process. This circumstance will, in almost every mind, prove decisive against his claim for further remuneration. If he has already made, from the use of his invention, enough to compensate him, why should he have more? Had he made an absolute sale of his invention, without reserve, and failed to receive a due remuneration from it, yet if he afterwards purchased an interest in it, and reaped a profit sufficiently large from working under it, he would not, I think, be entitled to the benefit of this act. He might show that the two transactions were entirely independent. He might, therefore, contend that he had not received an adequate reward, and that what he had accumulated since was the result of disconnected transactions, and not to be taken into the account. It would not be in his power, nevertheless, to say that he had "failed to obtain, from the use and sale of his invention, a

reasonable remuneration," adopting the words of the statute. The relation in which he stands to the invention and its owners, and his acquaintance with the operation of it, give him unusual opportunities for availing himself of its advantages. I cannot think, therefore, that he comes within the spirit of the act, or is entitled to receive an additional reward, when it appears that he has already obtained one from the use of his discovery—even though it was under arrangements ever so independent of his selling it. Besides this, a connexion has been maintained between him and Goodyear from the first sale of the invention to the time when Hayward made his deposition, and through the whole of it the license of 1838 has been kept on foot and played an important part in their negotiations. How much it has had to do with his enjoying the emoluments of the shoe license, as he terms it, it is not for me to say; for the extent of that connexion is not disclosed. That it had none, is not easy to believe. On no other ground can we account for the unliquidated condition of the original demand for the purchase money, the sale to Candee, the license to Hayward and Burr, and the application of \$800, paid by Candee to Hayward upon Hayward's other debts against Goodyear. If an inventor may leave such a state of things between himself and the assignee of his invention unexplained, and yet have his patent renewed on the ground that he has not been adequately rewarded, I see nothing to prevent every inventor from making an arrangement with an assignee under which he may receive a consideration ostensibly small, yet secure to himself advantages of which he need render no account when he claims an extension. He may thus compel the public, in every case of a valuable discovery, to pay him for it twice, besides enriching the assignee. I do not charge Mr. Hayward with any such design in this instance; but, if the course he has pursued is sanctioned, it will be impossible to prevent the planning and execution of such schemes hereafter. In fine, I challenge the warmest advocate of this proceeding to say that it has been made to appear to the "full and entire satisfaction" of any one that Mr. Hayward has failed to obtain a reasonable remuneration for his invention; or even to deny that there is ground for presuming that he has made large sums out of it, by availing himself of the license he originally received on the sale of his right, for which sums he has not accounted.

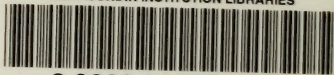
The conclusion at which I arrive is forced upon me, therefore, by the following considerations: I believe that the applicant, with a full sense of the value of his discovery, and under no pressure from want, deliberately sold it at the valuation which he himself had fixed, and has been paid accordingly; and I do not see enough in the ingenuity of the discovery, or in its utility to the public, to justify the extension of this patent for seven years longer, in order to remunerate him further. He has also reaped, from the use of this invention, an abundant reward for it; and by what means he obtained the license I am disposed to regard as not material. In fine he has not shown, as required by the act, to "my full and entire satisfaction," "that he has failed to obtain from the use and sale of his invention a reasonable reward for the time, ingenuity, and expense bestowed upon" it. With these views I can do no less than dismiss the application.







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